JPRS-UFM-87-008
29 DECEMBER 1987

FOREIGN BROADCAST INFORMATION SERVICE

JPRS Report

Soviet Union

FOREIGN MILITARY REVIEW

No 6, June 1987

Soviet Union

Foreign Military Review

No 6, June 1987

JPRS-UFM-87-008 *29 DECEMBER 1987*

CONTENTS

NATO Military Strategy—An Implement of Imperialism's Aggressive Policy

18010231a Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 3-10

[Article by Lt Col V. Stroginov: "NATO Military Strategy—An Implement of Imperialism's Aggressive Policy"]

[Text] The CPSU Program confirms the fundamental principle that the Communist Party is firmly and consistently defending Lenin's principle of peaceful coexistence of states with different social structures, and that the dispute between the two opposing social systems can and must be resolved by peaceful means. The USA and its allies adhere to an entirely different policy. The more strongly the course of historical development undermines the positions of imperialism, it was emphasized at the 27th CPSU Congress, the more hostile the policy of its most reactionary forces becomes toward the interests of nations. Imperialist powers are striving to coordinate their economic, political and ideological strategy, and they are trying to create a general front of struggle against socialism and other progressive forces in the world. Evidence of this can be found in the North Atlantic Treaty Organization, headed by the United States. Washington has adopted a course toward militarization of space. A dangerous situation has evolved on the European continent as a result of continuing growth of nuclear weapons in the USA and NATO. The Pentagon is advertising plans for locating a new type of chemical weapon in West Europe—binary ammunition. The scale of NATO troop exercises is increasing from year to year; many of them are being conducted in direct proximity to the borders of states in the socialist fraternity. All measures in the military area organized by the USA and NATO are aimed chiefly at preparing for an aggressive war against countries of the socialist fraternity.

NATO military strategy is an important inherent part of imperialism's adventuristic policy. This strategy reflects viewpoints on the nature and kinds of wars and on the methods of their initiation and conduct officially adopted by the bloc's leadership. It is defined by higher NATO political and military-political organs, it imposes identical requirements on the armed forces of all of the bloc's countries, and it addresses the plans for development of combined armed forces, the problems of control, the system of strategic deployment, the forms and methods of employment of NATO combined armed forces, and the principles of combat and rear support in the course of war. A certain complex of necessary measures to prepare the theaters of military operations in operational respects has been foreseen by NATO strategy. The goal of these measures is to create conditions permitting organized initiation of warfare by the combined armed forces and successful conduct of military operations.

A coalition strategy is being developed by coordinating the strategies of bloc members to the satisfaction of the bloc's leading states. This is explained by the fact that NATO military strategy does not rest on a unified military-economic base and scientific-technical potential. This is why the degree of participation of any country in the affairs of the bloc as a whole and in development of coalition strategy in particular is directly dependent on its military and economic might.

The viewpoints of the U.S. leadership and changes occurring in the fundamental principles of its military strategy have had and continue to have a decisive influence on the creation and development of NATO's coalition military strategy. Occupying the chief position in the North Atlantic alliance, the USA is the initiator and author of theoretical and practical measures in preparation for aggressive wars. Thus it is no accident that all postwar strategies were initially adopted in the United States, and then in NATO itself. Consequently in order to gain the fullest possible understanding of the content of modern NATO strategy, we must examine the principal stages in the development of U.S. military strategy and coalition military strategy of the North Atlantic bloc in their interaction.

Thus in the early 1950s the USA declared a strategy of "mass retaliation," which was transformed in NATO into the strategy of the "shield and saber." In this case the "saber," the Western press emphasized, represented U.S. strategic aviation and nuclear weapons, while the "shield" represented troops deployed in the European theater of war and the armed forces of this bloc's members in the East Atlantic. Based on the idea of achieving nuclear superiority of the USA over the Soviet Union, it foresaw preparation for and conduct of only total nuclear war against the USSR and other countries of the socialist fraternity.

The strategy of "flexible response" appeared in the USA in the early 1960s. By decision of NATO's military planning committee it was adopted in 1967 as the bloc's official military strategy. In addition to total nuclear war, it allowed for the conduct of limited wars in Europe as well—between countries of the NATO bloc and states of the Warsaw Pact. Limited armed conflicts with or without the use of nuclear weapons were now paraded as the most probable forms of future wars.

After this strategy was adopted, viewpoints of NATO's military-political leadership on development of the armed forces and their preparation for war changed significantly. While in former times conventional armed forces were to play a somewhat lesser role, now the structure, composition and combat equipment of the different arms and services, their ratio, their combat readiness and their deployment had to ensure a "flexible response" in any imperialist aggression. The quantity of NATO troops in Europe equipped with conventional weapons was to be increased dramatically by the USA's West European partners in the bloc.

But this did not mean any reduction of the role of nuclear weapons at all. As an example the USA developed the "unified combined operations plan," which foresaw combat use of strategic offensive forces in both total and "limited" nuclear war. "The plan foresees—and I am not exaggerating—transforming certain areas of Soviet territory into a continuous heap of ruins," said nuclear physicist Herbert York (the director of the Pentagon's research center prior to 1976). The main goal of the military strategy of the USA and NATO is expressed rather openly in such plans—liquidating the socialist structure in the Soviet Union and in other countries of the Warsaw pact, and establishing unshared domination by the "free world."

As a result of growth in strategic arms to a level ensuring that capitalist states could conduct their policy "from a position of strength," as well as to a level providing them the possibility for "guaranteed annihilation" of the enemy's forces and resources, chiefly by means of a preemptive strike, the American strategy of "realistic deterrence" was born in the 1970s. This policy existed for almost 10 years.

The Reagan administration, which came to power in the USA in the early 1980s, assumed the path of an even more reactionary military policy. Growth of imperialism's aggressiveness had a direct effect on development of the principles of its doctrine, and in particular the nature and methods of initiating and conducting wars. This was reflected in the "direct confrontation" strategy adopted by the leadership of the USA in 1981, and by development of the coalition military strategy of "flexible response."

Today NATO's coalition military strategy of "flexible response" foresees unleashing both a total and a "limited" nuclear war against the USSR and other Warsaw Pact countries. Recognition of the possibility of conducting a "limited" nuclear war in Europe that would not escalate into a total nuclear war is a fundamentally new principle of military strategy.

In the views of Western military specialists total nuclear war is war between coalitions of capitalist and socialist states, during which both warring sides will utilize all resources of armed conflict at their disposal, and chiefly their strategic offensive forces. The political goal pursued by the NATO leadership in such a war is to liquidate socialism as a sociopolitical system and to establish unshared domination of capitalism in the world. In the estimation of the NATO command, were a total nuclear war to arise, it would probably consist of two periods—initial and subsequent. The initial period (lasting not more than 30 days) may be characterized by intense combat operations of great scope, during which both sides, which would pursue decisive military-strategic goals, would utilize all of their military resources, and especially their nuclear resources, to achieve a swift victory over the enemy. A global nuclear offensive may be the principal content of the initial period.

In the course of this phase of the war the command of the North Atlantic bloc foresees reaching the following priority objectives through massed nuclear strikes, chiefly by strategic offensive forces: annihilating the Soviet Union's nuclear missiles, inflicting major defeat upon armed forces of the Warsaw Pact countries, destroying the most important administrative, political and industrial centers, disorganizing state and military control, and foiling mobilization and deployment of troops. In order to accomplish this, the bloc plans to commit the maximum possible quantity of forces and resources capable of using nuclear weapons.

The subsequent period, which would last longer, would include recovery and regrouping of surviving forces and resources. Foreign military specialists feel that the NATO command will attempt, within the shortest time possible, to create new troop groupings, restore the control and supply system to the extent possible, and conduct ground, air and sea operations with decisive goals, attainment of which would mean a successful end to the war.

A limited war is one in which both sides pursue limited political and military-strategic goals, and in which they deliberately limit the resources of armed conflict they employ and the regions of combat operations. Limitation of political goals is believed to be the main prerequisite of limiting the scale of the war. The goals pursued by NATO in a limited war of this type would be to alter the social structure in one or several socialist countries, to preserve an existing regime or to suppress aggressive actions of progressive forces in certain capitalist states, and so on. The planning and conduct of such a war are based on the use of NATO's combined armed forces, to include nuclear forces in the theater of war, and general-purpose forces. In this case the American command places the strategic nuclear forces of the USA in the role of a "nuclear umbrella," "an implement of deterrence," or "a potential threat," ensuring that the military conflict would be localized and preventing escalation of the war to the territory of the United States itself.

A limited war that starts with the use of conventional resources is viewed by the bloc's military-political leadership as the initial phase of a "limited" nuclear war. This kind of war is presently felt by the bloc's command to the most probable between the North Atlantic alliance and the Warsaw Pact. Judging from the experience of exercises, the duration of the nonnuclear period of a limited war in Europe may be up to 15 days. In the future, after NATO's long-range military program is implemented, the bloc's command feels that it will be possible to conduct a war in Europe without the use of nuclear weapons as an independent form of weapons.

Examining the conditions bringing about a limited war in Europe, foreign specialists feel that a local conflict may serve as the motivation for its initiation—a local conflict not only between two opposing groupings in

Europe and on the Atlantic, but also between the USA and any other country in different regions of the world. And examples of this have already occurred.

In particular, F-111 warplanes were standing by in their highest state of readiness at the American air force base at Lakenheath (Great Britain) on 24 April 1980. Each of the aircraft that were prepared for takeoff, the radius of operation of which permitted them to reach the northern areas of the European USSR without refueling, carried two nuclear bombs. At this time six American helicopters carrying special*purpose troop subunits were flying over the territory of Iran. President Carter ordered this detachment to free 93 Americans held as hostages in the U.S. embassy in Teheran.

The foreign press emphasizes that the armada of F-111 airplanes was made combat ready as a demonstration of force. The main goal of this action was to make it understood that the Soviet Union must show restraint in relation to the operation being conducted in Iran. This was a signal revealing the serious steps the United States could resort to in the event of a reaction by the Soviet Union to events occurring by its borders.

The operation failed but European NATO countries were never informed of the fact that Washington has made these airplanes combat ready by means of a direct unilateral order with the goal of utilizing them from the territory of one of its allies in the bloc as a gross nuclear threat to the Soviet Union. They never knew that they had been so close to being in the center of a conflict, or that their "great Atlantic ally" was indulging himself with "bold" maneuvers behind their backs.

The United States went even farther later on. The Reagan administration developed the "Iran scenario" in application to all of the Near and Middle East, performing brazen aggression against Libya.

The foreign press notes that NATO has recently been debating the directions in which such functions are to develop. A campaign has been initiated with the practical objective of substantiating the importance and necessity of preserving the basic principles of the "flexible response" strategy for a long period into the future. Coordinated statements by certain highly placed leaders in NATO and the U.S. administration are encouraging a continuation of the arms race, growth of the military power of NATO's combined armed forces, and their use to expand the USA's influence in different regions of the world. In early 1986 the West European press widely publicized a statement by NATO General Secretary Carrington in which he gave strong support to keeping the bloc's military strategy unchanged. In his words the effect of "nuclear deterrence" was and continues to be the basis for ensuring "the security of the West." Such statements are an unambiguous indication of the intention to keep nuclear weapons as the main resource in the overall military potential for achieving the political goals of a war. Moreover in a report to a policy and strategy symposium in Munich (November 1985) R. Bart, the American ambassador to West Germany, expressed the opinion that the Star Wars program is a means capable of fortifying strategy and creating "new relations between the East and West in matters of security."

At the same time in the opinion of many Western military specialists, including American, the propaganda barrage on the defensive nature of this program is nothing more than a screen behind which the weapons of blackmail and aggression are being forged. First of all the new class of armament being created in accordance with the U.S. president's "initiative"—aggressive space weapons—may be extremely effective as offensive weapons. Such weapons may be used not only to destroy the enemy's ballistic missiles after they are launched, but also to strike any other ground, air and sea targets from space.

Second, while implementing plans for militarizing space, the USA has no intention to abandon military programs calling for growth of its strategic offensive forces. American defense secretary Weinberger frankly said in one of his statements that concurrently with creating a space antiballistic missile system, the United States will also maintain a "mighty strategic triad" that could be used for a devastating nuclear attack on the Soviet Union.

It is no accident that production and deployment of new MX and Midgetman intercontinental ballistic missiles and Trident-2 sea-based strategic missiles, construction of the new B-1B and ATB strategic bombers, enlargement of medium-range missile forces in Europe and supply of long-range cruise missiles to existing strategic bombers as well as to nuclear-powered submarines and surface vessels are proceeding at full speed. In the opinion of many Western specialists, these programs are being implemented in a very specific direction—one of creating the potential for making a nuclear first strike.

The programs for modernizing nuclear weapons and for equipping the armed forces of the bloc's countries with qualitatively new conventional resources of armed conflict promoted development of the viewpoints of the NATO command not only on the forms of war but also on possible methods of initiating aggression against Warsaw Pact countries.

NATO's military leadership believes that the following means of initiating a war would be the most probable:
a surprise attack by forward armed forces groupings created in peacetime;
an attack following partial mobilization and accelerated reinforcement of forward troop groupings;
an attack after completing strategic deployment of the bloc's combined armed forces.

Foreign military specialists feel that the most important prerequisite of success in the first variant would be a sudden, powerful initial strike coupled with swift and maximum utilization of firepower and consolidation of

its results. Successful implementation of this plan is treated by Western specialists as one of the main prerequisites of victory. In his book "Strategy in the Missile Age" B. Brody, an American military theoretician, wrote: "As long as the advantage of a first strike remains—and in today's world it would be enormous—we must understand that even reasonable people may initiate total war, while unreasonable people would not require any justifications at all." Such cynical propaganda centered on a surprise attack as a means of initiating a war not only increases international tension but is also a direct appeal for aggressive war. As a group, NATO bloc countries already possess tactical weapons which can be used for a powerful surprise attack. With this purpose in mind, according to evidence in the foreign military press they plan to use all combat-ready nuclear missile forces (according to data as of late 1986—108 Pershing-2 medium-range ballistic missiles, 256 ground-based cruise missiles and so on) for a first, "decapitating" strike, after which active combat operations by forward troop groupings are to begin.

The danger of sudden initiation of war is increasing with the appearance of high-precision conventional weapons in NATO. Using such weapons, the aggressor will try to make powerful strikes by means of aviation (airplanes equipped with these weapons could stay out of range of air defenses) and missile subunits. An attack could be made by troop groupings (forces) created in peacetime without their preliminary deployment along state borders. Without conducting preliminary mobilization measures NATO can initiate military operations in Europe (including France and Spain) with 94 combat-ready divisions, with regard for presence of around 60 separate combat-ready brigades. They possess more than 18,000 tanks, and if we consider the 4,500 American tanks and over 6,000 West European tanks stockpiled in Europe, up to 30,000 tanks.

Ground troop formations and units may go over to the offensive directly from their permanent bases or from regions in which exercises are conducted. Such exercises have recently been characterized by enormous scope, and it is becoming increasingly more difficult to distinguish them from real deployment of armed forces for an attack.

There is another means of initiating a war that NATO military strategists have been devoting great attention to in recent years—attacking following partial mobilization and accelerated reinforcement of forward troop groupings. An important problem in this area is to reduce the time it takes to transfer reinforcements from the continental USA to Europe, and to transfer forces within the European theater of war. This is manifested especially clearly in integrated armed forces exercises such as the USA's "Reforger" and Great Britain's "Crusader." The Western press notes the following features of such exercises in recent years: wider participation of reservists in them, use of civil aviation and the vessels of private companies for air and sea shipments, and full support of American reinforcements by West European countries (especially the FRG).

The USA and NATO commands are also planning other important measures in this direction: conducting covert partial mobilization, placing troops at the highest level of combat readiness at their permanent bases, creating strong troop groupings in border regions under the cover of major exercises, and other operational measures.

Creation of a strategic assault echelon that would correspond to the requirements of the bloc's aggressive strategy—that is, one which would be capable of making a powerful strike against Warsaw Pact countries—is the main goal of partial mobilization and accelerated reinforcement of NATO's forward troop groupings in the European theater of war. The experience of the operational training of NATO combined armed forces shows that the strategic assault echelon will consist basically of NATO nuclear forces in the theater of war and of special purpose forces (especially American, West German and British army corps deployed in Central Europe).

The NATO military-political leadership feels that this variant of initiating the war would be acceptable only if the bloc's combined armed forces enjoy significant superiority both in general purpose forces and in nuclear weapons in the theater of war. It is precisely toward this goal that Washington is forcibly pushing its allies, requiring them to mandatorily fulfill the long-range military program NATO adopted in 1978 (covering the period to 1995).

Besides studying the two variants referred to above, in the course of exercises, games and training the NATO command is working out the details of initiating a war against the Warsaw Pact following culmination of the strategic deployment of the bloc's combined armed forces, which according to estimates of foreign specialists will require up to 30 days.

NATO military theoreticians believe that the war could be started and conducted following strategic deployment of the armed forces in the following pattern. The war will begin with massed attacks by aviation, wide use of conventional high-precision weapons and a transition to the offensive by large ground troop groupings in close coordination with air and naval forces. For a certain period of time the sides may limit their combat operations to conventional weapons. If the goals posed by the bloc's leadership are not attained with conventional weapons, the NATO command foresees a transition to "limited" use of nuclear weapons in the theater of war and further escalation of their use going as far as initiating a total nuclear war. In this case it plans to use nuclear weapons first, as was declared at a press conference during the Autumn Forge-82 exercises by American General Rodgers, supreme commander in chief of NATO combined armed forces in Europe.

Thus in the estimation of Western specialists total nuclear war may be initiated suddenly by armed force groupings deployed in peacetime following partial or complete strategic deployment of armed forces. Moreover it may arise as a result of escalation of a limited war into a total nuclear war.

A limited war may be started between NATO and the Warsaw Pact simultaneously in the entire theater of war, or in one of the theaters of military operations. The war may employ nuclear weapons or just conventional ones, and it may be started by any of the methods of initiating a war examined above.

Making its preparations for war in Europe, the military-political leadership of the North Atlantic alliance has created a widely branched troop control system. It is felt that this system must provide for rapid consultation between the NATO command and the governments of the bloc countries when the international situation becomes acute, for organized transition of the armed forces and economies of the countries to a war posture, for effective control of formations and major formations, for effective interaction between combined and national commands and so on. The NATO commands have already created permanent (underground) and mobile control posts (aboard airplanes, helicopters and motor vehicles) in peacetime.

Certain categories of formations and units that are to be operationally subordinated to the NATO command and the order and schedule of their resubordination have been determined, and the spheres of responsibility of combined and national control organs have been distributed. A special role is given to the NATO military committee as the bloc's supreme military organ. It is responsible for developing the common strategy and tactics of the troops, and for adopting general manuals, regulations, instructions and other important documents. The committee does the central planning of operational and combat training at the scale of NATO as a whole.

The strategic conception of "forward lines" developed by West German military theoreticians is the basis of NATO's coalition war strategy for Central Europe. Concurrently, weapon systems created in the USA and NATO that combine detection, control and attack resources into a single system have had a significant effect on development of the bloc's military strategy. Two new conceptions based on the principle of deep strikes were developed in the early 1980s: The "air-land operation (battle)" in the U.S. Armed Forces, and the "struggle against back-up echelons (reserves)" in NATO's combined armed forces.

The "forward lines" strategic conception was declared to be the most important element of the "flexible response" strategy. West German military researchers define its essence as follows: These are actions at the borders of the GDR and Czechoslovakia that must be carried out by subunits and units on lines moved forward by means of a wide tactical maneuver; these are actions in which the bulk of the armed forces are as close to the enemy as possible, and in which they conduct highly fluid operations. Emphasis is laid on the principal requirement of the conception—that in any military conflict combat operations in Central Europe must begin from a line on the Elba River.

It follows from statements by official representatives of the Bundeswehr that advance and deployment of the bloc's ground troops, tactical aviation and navy in peacetime near the borders of socialist countries with the purpose of a swift transition to offensive operations are laid at the basis of the "forward lines" conception. But for the purposes of concealment and propaganda it is called the "forward defense" conception, and the term "offense" is substituted in it by "fluid operations" or "counteroffensive."

In general, acceptance of this strategic conception by NATO was a major victory for Bonn militarists. It is emphasized in the monograph "Decision—In Germany" by West German researchers that the principles of the "forward defense" conception must be viewed as part of NATO strategy.

The "forward lines" conception is by its political nature an aggressive and antisocialist conception. "Without NATO's operational and strategic nuclear forces and without strong ties with NATO partners that are strong in military respects, 'forward defense' would be unattainable by the Bundeswehr alone within NATO's operational assault echelon in the border region by East Germany and Czechoslovakia, and it would be deprived of its political impact," admit West German generals. As with the "Blitzkrieg" strategy of Hitler's generals in World War II, this conception is oriented on a surprise attack (which would be chiefly a nuclear attack today).

The "air-land operation (battle)" conception presupposes simultaneous destruction of both the enemy's assault echelons and troops intended to exploit a breakthrough (back-up echelons, reserves) at the operational-tactical level—that is, in the course of operations conducted by an American army corps. This conception concerns itself with the use of forces and resources (existing in future conventional weapon systems) to achieve victory in a modern operation (combat). All forces and resources at the disposal of the corps commander may participate in deep strikes (to a depth of 100-150 km)—ground troops, formations and units subordinated directly to the corps commander, and attached and subordinated units (artillery, army and tactical aviation, ECM forces and resources).

The conception of "struggle against back-up echelons (reserves)" was developed and adopted in NATO under the influence of this American conception. It also is based on the principle of making deep strikes, but in contrast to the American conception it considers the

operational-strategic level—that is, the army group commander and commander-in-chief of the theater of military operations would have the responsibility for organizing attainment of the conception's goals.

In accordance with this conception, the principal requirement is to transfer military operations into the Warsaw Pact countries from the very beginning of the war, and to defeat opposing enemy groupings and reserves in short order. But powerful strikes by high-precision weapons throughout the entire depth of the enemy's operational troop formation, offensive operations, disorganization of the troop control and support system, persistent penetration into the rear or outflanking of the enemy, and wide use of airborne and marine assault forces may be planned in the early stage. The main prerequisite of success is believed to be interdiction of lines of communication and destruction of the back-up echelons and reserves of the Warsaw Pact troops at maximum depth (450-500 km) in order to prevent their timely commitment to the engagement.

There can be no doubt as to the aggressive nature of the new conceptions. All the more so because they do not rescind earlier plans for using nuclear and other weapons of mass destruction, though the main emphasis is now laid on developing and using new high-precision long-range conventional weapons (reconnaissance-strike complexes for example). This was also confirmed by NATO General Secretary Carrington, who was forced to admit that the new conceptions do not alter the essence of the strategy based on the use of nuclear missiles. Vain are the attempts by NATO strategists to attach a "defensive" label to the new conceptions, and to justify their adoption by the notion that they make it possible to raise the "nuclear threshold" (to postpone the beginning of the use of nuclear weapons). According to reports in the Western press the joke going around even NATO headquarters concerning the "defensive" purpose of the new conceptions is that this is "defense...from deep within the Warsaw Pact."

Thus development of old conceptions and appearance of new ones in the bloc means an even greater tilt of NATO's coalition military strategy in the direction of aggressiveness; it aggravates the already complex international situations and polarizes the military confrontation on the European continent.

Adoption of the document "On the Military Doctrine of Warsaw Pact States" in Berlin (in May 1987) at a conference of the Political Consultative Committee of the Warsaw Pact States is extremely timely. This document decisively confirms that the military doctrine of the socialist countries has a peaceful and strictly defensive nature. At the same time it clearly issues the warning that the armed forces of the allied states are being maintained at a level of combat readiness sufficient to prevent any surprises; and if an attack is made upon them nonetheless, they would offer a decisive repulse to the aggressor.

11004

Imperialism's Intrigues in the Near East

18010231b Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 10-16

[Article by Maj Gen L. Nikitin, candidate of military sciences, and Col O. Ivanov: "Imperialism's Intrigues in the Near East"]

[Text] The situation is becoming troubling and dangerous in the Near East region. There is no end in sight to gunfire on Lebanese soil, the war on the Iran-Iraq front is going into its seventh stubborn year, Syria and the freedom-loving Palestinian people are still receiving threats from Israel and its protectors, and the situation in the Persian Gulf remains tense.

The Near East conflict, which in addition to being the longest and most confusing is also very explosive, is the basis of the regional tension. It is destabilizing the situation in the world as a whole, it is imposing enormous hardships upon Arab peoples, and it is hindering their socioeconomic development. "The main source of the conflict's continuation," declared Comrade M. S. Gorbachev at a meeting with Syrian President Hafiz al-Assad in Moscow in April 1987, "is the expansionist policy of Israeli ruling circles supported by Washington. The USA interprets the Near East as a proving ground in which to test out its imperialist policy. The USA...is utilizing regional conflicts in general to manipulate the level of tension and confrontation."

The policy of the Reagan administration, its Western allies and Israel clearly contradicts the fundamental interests of Arab states. It is directed at establishing imperialist control over the region and transforming it into a springboard for the deployment of American armed forces with the purpose of suppressing progressive movements and creating a threat to the southern flank of the Soviet Union and other countries of the socialist fraternity. The American aggressive doctrine of "neoglobalism" and the conception of "low intensity conflicts" are being practically implemented in the Near East. This is expressed in particular by the direct or indirect use of armed forces to influence the situation in the Near East. A stronger American military presence in the region can be noted in this case, including in the form of interventionistic "rapid deployment forces," which objectively create the conditions for complicating the military-political situation even further.

The events of the past few years show that the U.S. Navy's 6th Fleet is the Pentagon's main strike force. It is being used today to "defend the interests" of Washington in the Central and Eastern Mediterranean, as well as in Near East and North African countries contiguous

with it. At different times its strength is from 20 to 40 warships and vessels, and 80 or more deck-landing airplanes. The 6th Fleet's carrier, attack and amphibious assault groups constantly patrol the Mediterranean Sea, where they serve as a lever of military pressure upon the countries of the region and as an implement of armed interference in their internal affairs. Evidence of this can be found in facts such as the aggression against the Lebanese and Palestinian peoples in 1982-1984, the attack on Libya in 1986, and the unceasing pressure upon Syria. Plans are being made to coordinate the actions of American naval forces in the Eastern Mediterranean not only with the Israeli navy but also the Egyptian navy. Thus ship groups of the navies of these countries participated in joint exercises in 1985 and 1986, and they are to be conducted in the current year as well.

The navy's 109th Task Force, which contains five or six ships, is constantly present in the Persian Gulf zone to exert strong pressure on countries of the Near East region from the southern direction and to "defend the interests" of the USA. There are plans to reinforce this task force "if necessary" with American ship assault groups patrolling in the Indian Ocean. The foreign press notes that the number of ships of the British and French navies in the vicinities of the Arabian and Red seas will not decrease, and that in a number of cases it will increase.

The Reagan administration is also capitalizing on the presence of American ground troops and air forces in the region in the interests of imperialist policy in the Near East. A battalion of "rapid deployment forces"—the basis of so-called "multinational forces"—is deployed on Sinai Peninsula. Contingents of numerous military advisors, specialists and instructors totaling over 5,000 persons are present in Saudi Arabia, Oman, Egypt, Turkey, Jordan and some other countries. The headquarters of the "TUSLOG" air division, a tactical air group, communications subunits and logistical support subunits are located in Turkey. The Americans have over 30 military facilities of different kinds in this country, including nuclear ammunition dumps and the air base at Incirlik, where 18 or more F-16 fighter-bombers are located as a rule. NATO E-3A AWACS airplanes regularly conduct reconnaissance flights from another air base—Konya [transliteration]. In recent years the American command has periodically transferred airplanes of its air force to the Near East from air bases on the European continent in order to rehearse operations in "extraordinary conditions." Each month F-16 fighter-bombers based at the Turkish air base of Incirlik are replaced in compliance with a "rotation" program. In order to further reinforce its military presence in the Near East and support operations in "extraordinary conditions," the United States is actively developing military bases and facilities in Saudi Arabia (Riyadh, Al Hufuf), Oman (Muscat, Thamarit, Masirah), Bahrein (Al Muharraq) and in Egypt and Israel. Improvement of the elements of the infrastructure with regard for the interests of the armed forces of the USA and NATO countries is continuing in these and other states, while reserves of material and technical resources are being stockpiled in Israel, Egypt and Saudi Arabia. A combined regional air defense system that can be used to support the operations of "rapid deployment forces" is being created with the assistance of American specialists in Arab countries belonging to the so-called Council for Cooperation of Arab States of the Persian Gulf. The scale of operational and combat preparations of these forces in Egypt, Oman and Somali has been expanding in recent years (the Bright Star-81, -83 and -85 exercises). London is also pursuing a similar policy in the region. Evidence of this can be found in the joint exercises of the armed forces of Great Britain and Oman (in 1986, in the vicinity of the Persian Gulf), in which more than 5,000 persons, up to 20 ships and not less than 100 warplanes and helicopter gunships took part.

Growth of the USA's military presence in the Near East and preparation of the region for actions by American troops and their allies are creating a tense atmosphere and the danger of new centers of armed collisions; this is having a negative influence on sociopolitical processes occurring in the Arab world. The experience of the last few years also indicates that the American administration is following a long-term course directed at consolidating right-wing forces and conservative regimes in the region. The USA associates strengthening its positions and pursuing an expansionist foreign policy course with further reinforcement of political, economic and military cooperation chiefly with Israel, Egypt and Turkey, as well as with monarchical Arabian regimes of the Persian Gulf.

Military-political ties between the USA and Israel are developing within the framework of American-Israeli strategic cooperation, which was legalized by treaties signed in the early 1980s. The "Memorandum of Mutual Understanding in the Area of Strategic Cooperation" (1981) and the treaty "On Strategic Cooperation" (1983) have especially important significance to both countries. In accordance with these documents Washington is continuing to expand comprehensive, chiefly military assistance to Israel. In particular prior to 1990 Israeli armed forces must additionally receive Lance operational-tactical missile systems, F-16 and F-15 airplanes, modern armored equipment and other military equipment from the USA. The USA plans to provide its Near East partner with assistance in building three diesel submarines. In order to boost Israel's economy the Reagan administration gave a number of American firms permission to place orders with Israel for a total of more than $1.2 billion. Moreover many American companies are increasing their direct assistance to Israeli war industry, and they intend to cooperate in the development of nuclear research. In turn, some of Israel's scientific research centers and firms will take part in implementing the infamous Star Wars (SDI) program. According to estimates of Western reviewers the United States allocated $4.8 billion to Tel Aviv, of which a

significant proportion was spent for military purposes. It was not without the Pentagon's cooperation that the Israeli war machine developed and adopted the aggressive conceptions of "preventive war," "preemptive strike" and "no-loss war."

In exchange for assistance rendered, Tel Aviv is obediently traveling in the mainstream of American policy in the Near East. The Pentagon has in fact gained the right to utilize Israeli territory for its troops, and to create reserves of material-technical resources and armament there. Washington is attentive to the requests and advice of Tel Aviv. In other words today Israel is the USA's chief military-strategic ally in the Near East region, and cooperation between the two countries has in fact assumed the elements of a military-political alliance.

In recent years the Reagan administration and the NATO leadership are devoting increasingly greater attention to Turkey, which is an active member of the North Atlantic alliance and the outpost of this aggressive bloc on the southern flank. In addition to providing extensive military-economic assistance to Ankara (over $5 million in 1986), the USA is helping to modernize the country's war industry and its air defense system, and to develop the network of air bases and ports as well as other elements of the infrastructure. Turkish ground troops, air and naval forces are continuing to be outfitted with modern weapons and military equipment in accordance with NATO plans and with Washington's active assistance. Thus replacement of obsolete Honest John tactical rockets by 203.2-mm howitzers, which can fire nuclear ammunition, has been completed.

A treaty "On Cooperation in Defense and Economics" was signed in the course of American-Turkish negotiations, and a number of other technical documents and agreements governing bilateral cooperation in the military area in the period to 1990 are being prepared for signing. Ankara has confirmed that it consented to maintain and, according to some foreign press reports, increase the American military presence in the country. The Turkish leadership supported plans for increasing the military potential of NATO bloc states and for deploying Pershing-2 medium-range ballistic missiles and ground-based cruise missiles in West Europe. In the event of war, according to a foreign press report, Turkish armed forces operating within NATO will have the task of conducting combat operations in the Balkan and Caucasian sectors. These reports are confirmed by exercises that have been carried out by NATO and in accordance with Turkish national plans. The Pentagon is making a persistent effort to get the Turkish government to allow American strategic aviation to make wide use of the country's airfields, to deploy new radiotechnical facilities and to widen the network of various types of storage dumps and communication systems. The Americans would like to deploy their cruise missiles in Turkey, and to significantly increase the number of warplanes permanently based there.d The Reagan administration is developing multilateral ties with the Arab Republic of Egypt with the purpose of keeping it within the sphere of its imperialist influence. Capitalizing on Cairo's keen interest in extensive economic and military assistance, the USA is trying to transform it into an implement of political pressure. In 1986 American military-economic aid to Egypt totaled around $1.3 billion. The USA is additionally providing Egyptian armed forces with 40 F-16 airplanes, five E-2C Hawkeye AWACS airplanes, armored equipment and artillery armament, radar stations, modern electronic equipment for the air force and air defense troops, warships and launches. In turn the Egyptian leadership has granted the Pentagon the right to use the country's territory for "rapid deployment forces." Joint exercises of Egyptian and American troops have acquired a regular nature, and their scale is constantly growing. In particular major exercises such as "Bright Star," "Iron Cobra" and "Sea Wind" are being conducted on a planned basis. An American-Egyptian combined military coordinating committee created in 1982 continues to function actively. Other NATO countries are also providing militaristic assistance to Egypt. At the same time it should be noted that Washington is trying to keep this huge Arabian country from attaining military superiority over Israel.

That the Near East crisis and its root cause—the Palestinian problem—remain unresolved is having an increasingly more negative influence on the situation in the region. The activity of the Reagan administration, which is taking active steps to undermine the position of national patriotic forces and to divide them, shows that in principle it has no intention of altering the anti-Arab strategic course it has developed over the years. This course is directed at concluding separate deals between Arab countries and Israel in the spirit of Camp David, at preventing creation of a sovereign Palestinian state and at ignoring the Near East peace process supported by the Palestinian Liberation Organization (PLO). Israel, which is actively supported and kept alive by the American plan, is continuing to annex occupied Arab lands under the excuse of creating "safe borders." The slogans of Zionist extremists are calling increasingly more loudly for the removal of all Arabs both from Israel and from Arab territories it seized in 1967. And from year to year the number of Israeli militarized settlements on these territories, which now exceeds 220, is increasing.

Despite the protests of Arab countries and the condemnation of the world public, the United States and its ally Israel are continuing to implement the infamous "Reagan plan" for the Near East, proclaimed in 1982. As we know, it excludes Palestinian self-determination, substituting it by administrative autonomy within the framework of Israeli-Jordanian relations.

But it is becoming increasingly more difficult for the American administration and its allies to impose their Near East policy. Ideas of separate negotiations are being rejected by the Arab world. In these conditions Washington is attempting to maneuver and to deal with certain circles in the region, declaring its readiness to

"actively promote a Near East settlement and resolution of the Palestinian problem." It is promising extensive economic and financial assistance to Arab countries if they enter into negotiations with Israel. Tel Aviv is acting in unison with its senior partner. Evidence of this can be found in particular in the plan for financial enslavement of Arab states, comparable with the famous "Marshall Plan," proposed by S. Peres, the present minister of foreign affairs. The Arabs are promised large advances from the International Monetary Fund if they would only side with American-Israeli policy in the region. The USA is laying special hopes in this respect on Egypt. An effort is being made to get it to create conditions encouraging Jordan to engage in separate talks, and through it, the "moderate" Palestinians on the Jordan's West Bank. Recently Washington and Tel Aviv even voiced support for the idea of convening an international conference on the Near East. But the conditions they propose for it are unacceptable to the Arabs, in actuality setting the stage for direct negotiations with Israel. As before, imperialist circles do not recognize the PLO as the sole legal representative of the Palestinian people.

The situation also remains complex in the Palestine Resistance Movement (PRM) itself and in its core, the PLO, where according to the foreign press certain conflicts exist between the leadership of the al-Fatah (Palestine National Liberation Movement) and other political groupings. Efforts undertaken by a number of Arab countries with the purpose of unifying these forces were unable to produce significant results over a long period of time. At the same time new initiatives proposed by Algeria and the PLO leadership resulted in the convening of the National Council of Palestine in April 1987, during which a tendency toward improvement of the situation in the Palestine Resistance Movement was noted. Difficulties in the PRM, Israeli aggression in Lebanon in 1982, the inconsistency of the policies of a number of Arab countries and the subversive activities of the USA and other Western states led to a situation in which the political organs and military organizations of the Palestine Resistance Movement were scattered among several Arab countries, and their possibilities for conducting the struggle against Israeli aggressors decreased significantly.

Continuing tension in Lebanon, where collisions between opposing groupings have been going on for a long period of time and where armed actions are being conducted by Tel Aviv, is a reflection of the unresolved nature of the Near East crisis, and of the aggressive activities of the United States and Israel. Striving to compel the Lebanese leadership to travel in the mainstream of imperialist policy, and attempting to eliminate the Palestinian presence in this country, weaken national patriotic forces and undermine the positions of Syria, which had assumed the mission of guaranteeing the security of Lebanon, Israel and its partners are inciting a struggle between opposing religious and political groupings as well as between the Shi'ite organization "Amal" and the Palestinians. Southern Lebanese territory with an area of 850 square kilometers is under the de facto control of Tel Aviv; this area has been declared by the aggressors to be a "security zone," and the pro-Israeli "Army of Southern Lebanon" operating here receives considerable material and military assistance from its masters. This military formation is used by Tel Aviv to organize an active struggle against Palestinians and Lebanese patriotic forces. Nor are direct military actions of the interventionists against peaceful Palestinian refugees and the Lebanese public ceasing. Violation of the airspace of this sovereign Arab state by airplanes of the Israeli air force and air strikes on Palestinian camps have become the norm. The situation in Lebanon is complicated by the subversive activity of pro-Christian forces, a certain faction of the leadership of which favors division of the country on a confessional (religious) basis. Some of the leaders of these forces maintain contacts with Israel.

Active attempts by Iran to intensify its influence in Lebanon, chiefly among its Shi'ite population, have been noted in recent years. The activities of pro-Iranian Shi'ite religious groupings, particularly the "Khezbolla" and other extremist organizations, have been widening. Their goal is to create a Muslim state in the country patterned after modern Iran.

On this background, Syria, which favors the unity and independence of Lebanon, is pursuing a firm and consistent policy of normalizing the situation in that country. It is supported by many Arab countries, chiefly Libya, Algeria and the Peoples Democratic Republic of Yemen.

The military-political duel between Syria and Israel's aggressive course is continuing to intensify in the present conditions. The Syrian command is forced to implement retaliatory measures of a defensive nature in connection with the constant threat of an armed attack by Tel Aviv, which has concentrated a large troop grouping in the country's northern military district, especially on the Golan Heights (according to the Western press the Israeli military contingent located here contains not less than 50,000 men).

Falsely blaming Syria for protecting terrorist elements, the USA, Great Britain and Israel periodically intensify their direct military pressure on the country with the real objective of forcing it to change its foreign policy course. In early 1987 the United States concentrated a naval grouping consisting of over 20 warships in the Eastern Mediterranean, while Great Britain transferred an additional number of warplanes and a detachment of special-purpose troops to its air base at Akrotiri (Cyprus). A constant succession of exercises by the Israeli army and gatherings of reservists occurs on the Golan Heights.

The situation on Cyprus, where tension in the relations between Greek and Turkish communities persists, remains complex. Creation of the so-called Turkish

Republic of Northern Cyprus in the northern part of the country under Turkey's sponsorship and concentration of Turkish troops (over 20,000 men) in this part of the island with the silent consent of imperialist circles is deepening division of the Cypriote state. The unstable situation on Cyprus is intensified by the presence of English military bases as well as American and NATO military facilities there. Absence of a solution to the Cyprus problem is creating additional difficulties in Turko-Grecian relations.

One of the serious problems of the Near and Middle East is the Iran-Iraq war, the causes of which include territorial conflicts, irreconcilability of political, religious and ideological conceptions and the desire of Iran's clergy to eliminate Iraq's present regime and to establish an Islamic state there at any cost. The war has brought enormous suffering to the peoples of both countries. Human losses of the sides now exceed a million persons, and considerable harm has been done to the economy of the states, totaling at least $500 billion according to conservative estimates of foreign specialists. Large areas of the cities now lie in ruins and many peaceful inhabitants have been sacrificed as a result of the mutual bombardments and bombing. The war of attrition is making the domestic political situation in both Iran and Iraq increasingly more complex. But the position of the Iranian clergy with Khomeini at its head remains unchanged—"war to a victorious conclusion." Iranian troops managed to seize a small area of Iraqi territory in the south of the country at the price of enormous human and material losses. But the fierceness of the Iraqi army's resistance is evidence of its intention and its possibilities for repelling the enemy's offensive. Both sides have concentrated enormous human and material resources on the front—over 80 divisions and thousands of detachments of paramilitary formations and militia. The total strength of personnel in armed forces and militarized formations participating in the war has exceeded 2 million.

Mediation efforts by a number of Arab countries, the League of Arab Nations, the Islamic Conference Organization and the United Nations have not yet produced positive results. This war is an objective factor causing further complication of the military-political situation in the Persian Gulf zone, it is a threat to shipping in this region, and it is promoting expansion of American military presence there. It is leading to an escalation of the arms race not only in the warring countries but also in all Persian Gulf states. The flow of Western arms to Teheran is continuing openly and secretly. Despite the Reagan administration's official declarations of noninterference in this conflict, the USA has participated in secret deliveries of weapons to Iran, having sent TOW antitank missile systems, Hawk antiaircraft missiles, aircraft engines and ammunition to that country (arms for Nicaraguan "Contras" were purchased with the profits). From all indications Washington is not interested in halting the conflict. The White House bases its strategy on the idea that its stance is causing further weakening of both countries, which have assumed anti-imperialist positions, and that it is creating conditions allowing enlargement of the American grouping of armed forces in the Persian Gulf and making the warring states economically more dependent on the West.

The complex situation in the Persian Gulf, the danger of escalation of the Iran-Iraq war and, finally, the desire of the Iranian leadership to export the "Islamic revolution" to other countries of the region are objectively causing the military-political consolidation of gulf states and reinforcement of their Council for Cooperation of Arab States of the Persian Gulf. Military integration and creation of combined armed forces, their control organs and a combined air defense system are deepening within the framework of this organization. Operational and combat training is being organized and conducted within the combined armed forces. Saudi Arabia, which is absorbing over half of the financial outlays on defense and on fulfillment of military-economic programs, is displaying the greatest activity in uniting the monarchical regimes.

Under these conditions the USA and its NATO allies are doing everything they can to transform the Council for Cooperation of Arab States of the Persian Gulf into a military-political bloc with a pro-Western orientation. It is precisely with these ends in mind that deliveries of weapons and military equipment to the countries of this council are constantly increasing; deliveries in 1981-1985 are valued by Western reviewers at $45 billion. Assistance in developing the infrastructure is being imposed by Western countries, though not without regard for the needs of the armed forces of the USA and its allies. The leadership of these states is spreading fear with the threat of the spread of Iranian expansion in the event of victory over Iraq, with the fabrication of a Soviet penetration into the Persian Gulf, with possible blockading of the Strait of Hormuz by Iran and so on. These same excuses are Washington's justification for the "necessity" of increasing American military presence in the region. This is supported by specific actions. Thus in March 1987 the Pentagon concentrated around 15 ships and vessels in the northern Indian Ocean under the leadership of the multipurpose aircraft carrier "Kitty Hawk," demonstrating its "readiness" to reinforce its naval grouping in the Persian Gulf.

Foreign reviewers are turning special attention to the negative effect the persisting inter-Arab contradictions of a political, economic and religious nature are having on the situation in the Arab world. These contradictions are being inflamed by right-wing pro-imperialist circles as well as by the intensifying struggle for leadership between individual countries. Conflicts are deepening between Arab states with a capitalist orientation and those that have assumed a progressive path of development. Taken as a whole, the approach of the Arabs to solving the Palestinian problem is not united. Syria, Yemen, Libya and Algeria are consistently defending the

principle of an integrated, just settlement to the Arab-Israeli conflict, with regard for the legal interests of the Palestinian people. Egypt continues to support compromise. The countries of the Persian Gulf are not always consistent in their actions, which is being capitalized upon actively by the Reagan administration. Turko-Grecian relations also remain complex owing to a number of unsettled issues pertaining to the Aegean Sea, and the Cyprus problem. It is precisely owing to the first reason that the relations between these countries grew dramatically more complex in late March 1987. All of these factors are creating conditions promoting growth of tension in the Near East region. In a number of cases imperialist states are not only doing nothing to localize the conflict situations, but by their actions they are also promoting their enlargement.

A real program for attaining a just and firm peace in the Near East is contained in well known proposals of the Soviet Union confirmed by the 27th CPSU Congress. Firmly defending a principled position in solving the region's problems, the USSR is certain that such a peace may be achieved only if Israeli troops pull out of all Arab territories occupied in 1967, and if the Arab people of Palestine are allowed to exercise their right of self-determination and to create an independent state. The path toward this goal lies through honest collective efforts within the framework of an international conference in which all interested sides would participate, including the Palestinian Liberation Organization—the sole legal representative of the Palestinian people.

Soviet policy concerning a Near East settlement is enjoying the understanding and support of the public and of the political and social circles of the overwhelming majority of Arab states, and of the world public. However, occupying a rigidly anti-Arab position, the USA and Israel are hindering implementation of Soviet proposals, which provide a real possibility for resolving one of the most acute conflicts in the world.

11004

"Heavy" Ground Troop Divisions of the USA

18010231c Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 17-22

[Article by Lt Col K. Volodin: "'Heavy' Ground Troop Divisions of the USA"]

[Text] Having announced its adventuristic course toward "defending the free world," "thrusting back communism on a world scale" and "fighting international terrorism," the U.S. administration is implementing its doctrine of "neoglobalism," in which concepts such as conflicts of high, moderate and low intensity are widely employed side by side with the categories of "universal and limited war." Military preparations, the main orientation of which is on creating armed forces capable of conducting combat operations of any intensity in different regions of the globe, are being carried out in correspondence with these concepts.

The desire of the American military-political leadership to attain global and regional superiority over the Soviet Union is manifesting itself especially clearly in the course of implementation of the long-range (1981-1990) "Army-90" program for developing the ground troops. Intensive research and practical measures to develop and adopt qualitatively new weapon systems and combat equipment, to improve organizational structure and to find optimum ways of using these systems in combat are being carried out within the framework of this program.

The theoretical viewpoints of military specialists on the possible nature of future wars and on the associated need for maintaining "heavy" and "light" formations are at the basis of improvements in the organizational structure of the ground troops. It is believed that "heavy" divisions (mechanized and armored) will be used chiefly in combat activities of high and moderate intensity, within the composition of "heavy" army corps in the European theater of war, where a developed infrastructure exists and where the terrain permits creation of deeply disposed mechanized (armored) groupings.

Considering their high strategic mobility, "light" divisions (light infantry, motorized, airborne [vozdushodesantnaya] and airborne assault [vozdusho-shturmovaya]) are to be equipped for rapid transfer and for conduct of combat activities predominantly of low intensity, chiefly in poorly engineered theaters of military operations outside the "zone of responsibility" of the NATO combined armed forces. According to the design of Pentagon strategists they should become the "tool" for implementing the aggressive policy of "neoglobalism" from a position of strength, chiefly in relation to developing countries that have selected the noncapitalistic path of development. Concurrently, ways of using them in combat in Europe to support the flanks of NATO combined armed forces and to operate in special conditions (forests, mountains, large population centers) are also being examined.

By 1990, according to foreign military press reports, the ground troops will consist of basically of mechanized and armored divisions (14 out of 28) possessing the "Division-86" standard organizational structure and categorized as "heavy" divisions.

The mechanized (armored) division is the principal combined-arms formation. It includes (see diagram) a headquarters and a headquarters company, three brigade headquarters, five motorized infantry and five tank battalions (there are six tank and four motorized infantry battalions in an armored division), divisional artillery, an army air brigade, an antiaircraft battalion, three battalions (reconnaissance and radioelectronic warfare,

signal, engineer), the divisional rear services command and two separate companies (antinuclear defense and military police). A mechanized (armored) division (see table) has a total strength of over 19,000 personnel, 290 (348) M1 Abrams tanks, 270 (216) M2 Bradley infantry fighting vehicles, 118 M3 combat reconnaissance vehicles, 168 M577A1 command-and-staff vehicles, 348 (366) M113A1 armored personnel carriers, 12 203.2-mm and 72 155-mm self-propelled howitzers, 9 MLRS multiple rocket launchers, 60 (48) M901 TOW self-propelled antitank guided rocket launchers, 288 (252) Dragon antitank guided rocket launchers, 66 106.7-mm self-propelled mortars, 18 Improved Chaparral surface-to-air missile systems, 36 Vulcan self-propelled antiaircraft guns, 75 Stinger portable antiaircraft missile systems (launcher crews), 146 helicopters including 54 reconnaissance, 50 fire support, 30 general purpose and 12 radioelectronic warfare helicopters, over 4,000 motor vehicles of different types, and over 5,000 radio stations.

It has been noted on several occasions in the American military press that "heavy" divisions require improvements, especially along the lines of increasing their strategic and tactical mobility. Decreasing the division's personnel strength to 16,000-17,000 by reducing its headquarters and rear services subunits, transferring the 203.2-mm self-propelled howitzer and Improved Chaparral surface-to-air missile subunits correspondingly to field artillery and antiaircraft brigades at the army corps level, and simplifying the organization of the army air brigade are foreseen as of the beginning of 1988 in this connection.

The motorized infantry battalion (896 persons) is the main tactical subunit. A battalion tactical group is to be formed out of it for the period of combat to carry out missions as part of a brigade. The battalion contains a headquarters and six companies—headquarters, four motorized infantry and antitank. It contains a total of 54 M2 Bradley IFVs, 6 M3 combat reconnaissance vehicles, 12 M901 TOW self-propelled antitank guided rocket launchers, 36 Dragon antitank guided rocket launchers, 6 106.7-mm self-propelled mortars, 8 M577A1 command-and-staff vehicles, 23 M113A1 APCs, 114 motor vehicles, 247 radio stations and other weapons and military equipment. The headquarters (22) includes four sections—reconnaissance, operations, personnel and logistics. It possesses two M2 Bradley IFVs and three M577A1 command-and-staff vehicles. The headquarters company (345) consists of an administration and six platoons—reconnaissance, mortar (two sections possessing three 106.7-mm self-propelled mortars each), signal, repair, support and medical. The latter possess six M3 combat reconnaissance vehicles, six 106.7-mm self*propelled mortars, five M577A1 command-and-staff vehicles, 15 M113A1 APCs, 104 radio stations, 114 motor vehicles and other armament.

The motorized infantry company (116) includes an administration and three motorized infantry platoons with three motorized infantry squads each; these subunits possess a total of 13 M2 Bradley IFVs, 9 Dragon antitank guided rocket launchers, 28 radio stations and infantry weapons.

The antitank company (65) includes an administration and three antitank platoons possessing four TOW M901 self-propelled antitank guided rocket launchers each; the company possesses a total of 12 M901 TOW antitank guided rocket launchers, 4 M113A1 combat repair shops, 21 radio stations, and other weapons and combat equipment.

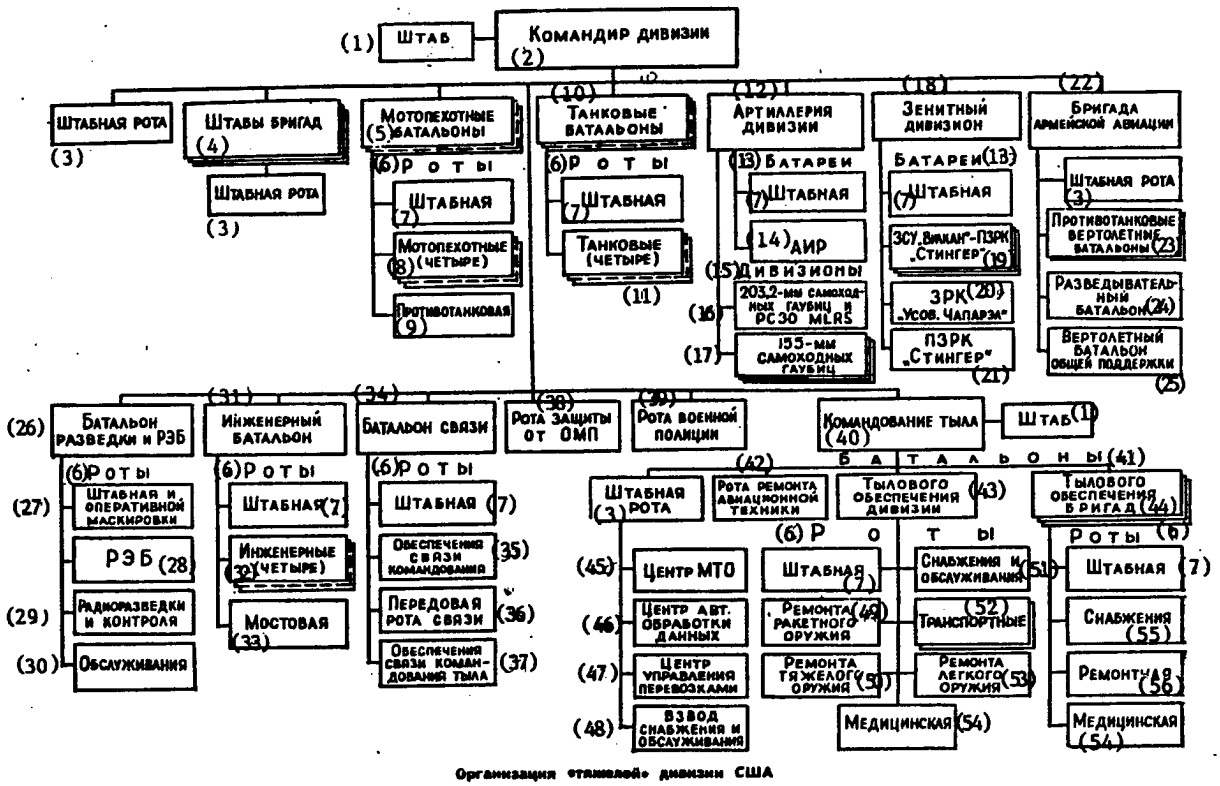
The tank battalion (523) can serve as a basis for a battalion tactical group, operating as a rule within the composition of a brigade and intended for annihilation of enemy manpower, fire weapons and military equipment by means of a combination of fire, maneuver and striking power. It includes a headquarters and five companies—a headquarters company and four tank companies, possessing a total of 58 M1 Abrams tanks, 6 M3 combat reconnaissance vehicles, 6 106.7-mm self-propelled mortars, 8 M577A1 command-and-staff vehicles, 11 M113A1 APCs, 89 motor vehicles, 171 radio stations and other weapons and combat equipment.

The headquarters of a tank battalion is similar in organization and personnel strength to the headquarters of a motorized infantry battalion. The difference is that instead of M2 Bradley IFVs, M1 Abrams tanks are used to support the work of the battalion commander and chief of staff in a combat situation.

The headquarters company (253) is similar in structure and armament to the corresponding company of a motorized infantry battalion. Differences exist in personal strength and in the number of radio stations (96) and motor vehicles (85).

The tank company (61) includes an administration and three tank platoons possessing four M1 Abrams tanks each (a total of 14 tanks).

The 203.2-mm self-propelled howitzer and MLRS multiple rocket launchers battalion (578) is intended to provide general artillery support to combined-arms subunits and to reinforce the fire of other of the division's artillery weapons. Its composition includes a headquarters and five batteries—headquarters, MRLS multiple rocket launcher (nine launchers), two 203.2-mm self-propelled howitzer, six guns and six Dragon antitank guided rocket launchers in each)[?], and service. It possesses nine MRLS multiple rocket launchers, 12 203.2-mm self-propelled howitzers, 12 Dragon antitank guided rocket launchers, 11 M577A1 command-and-staff vehicles, 184 motor vehicles, 159 radio stations and other armament. The 155-mm self-propelled howitzer battalion (774) is intended to provide direct artillery support to a divisional brigade. It contains a headquarters and



Организация «тяжелой» дивизии США

Organization of an American "Heavy" Division

Key:1. Headquarters 2. Division commander 3. Headquarters company 4. Brigade headquarters 5. Motorized infantry battalions 6. Companies 7. Headquarters 8. Motorized infantry (4) 9. Antitank 10. Tank battalions 11. Tank (4) 12. Artillery division 13. Batteries 14. Artillery engineering company 15. Battalions 16. 203.2-mm self-propelled howitzers 17. 155-mm self-propelled howitzers 18. Antiaircraft battalion 19. Vulcan "Stinger" 20. Improved Chaparral 21. Stinger portable anti-aircraft 22. Army air brigade 23. Antitank helicopter 24. Reconnaissance battalion 25. General purpose helicopter battalion 26. Reconnaissance and radio battalion 27.Headquarters and operational camouflage and concealment 28. Radioelectronic warfare battalions 29. Radio intelligence and monitoring 30. Service 31.Engineer battalion 32. Engineer (4) 33. Bridge-building 34. Signal battalion 35. Command signal support 36. Forward signal company 37. Rear services command signal support 38. Anti-nuclear defense company 39. Military police company 40. Rear services command 41. Battalions 42. Aviation equipment repair 43. Division rear services 44. Brigade rear services 45. Logistical support center 46. Automatic data processing center 47. Transportation control center 48. Supply and service platoon 49. Rocket weapon repair 50. Heavy weapon repair 51. Supply and service 52. Transportation 53. Light weapon repair 54. Medical 55. Supply 56. Repair'electronic warfare battalion

five batteries—headquarters, three 155-mm self-propelled howitzer (with eight guns and eight Dragon antitank guided rocket launchers each) and service. It possesses a total of 24 155-mm self-propelled howitzers, 24 Dragon antitank guided rocket launchers, 13 M577A1 command-and-staff vehicles, 15 M113A1 APCs, 177 motor vehicles, 240 radio stations, and other weapons and combat equipment. The personnel strength of a battalion in an armored division is 750.

The antiaircraft battalion (861) is intended to provide cover against enemy airplanes and helicopters from low and minimum altitudes to the division's units and subunits. Its organization includes a headquarters and six batteries—headquarters, three combined Vulcan self-propelled antiaircraft gun and Stinger portable surface-to-air [?] missile system batteries, and one battery consisting of Improved Chaparral antiaircraft guided missile systems and Stinger portable antiaircraft guided missile systems. It possesses 18 antiaircraft guided missile systems, 36 self*propelled antiaircraft guns, 75 portable surface-to-air missile systems (launcher crews), 21 M113A1 APCs, 2 M577A1 command-and-staff vehicles,

ЛИЧНЫЙ СОСТАВ И ОСНОВНОЕ ВООРУЖЕНИЕ «ТЯЖЕЛОЙ» ДИВИЗИИ США

(1) Личный состав и вооружение	(2) Командование, штаб и штабная рота дивизии	(3) Командование, штаб и штабная рота бригады (три)	(4) Мотопехотный батальон (пять/четыре)	(5) Танковый батальон (пять/шесть)	(6) Артиллерия дивизии	(7) Зенитный дивизион	(8) Бригада армейской авиации	(9) Батальон разведки и РЭБ	(10) Батальон связи	(11) Инженерный батальон	(12) Командование тыла	(13) Рота защиты от ОМП	(14) Рота военной полиции	(15) Всего
Личный состав, человек (16)	191	133	696	523	3260	861	1994	509	763	1047	3165	141	182	19 647/19 274
Танки М1 «Абрамс» (17)	—	—	—	58	—	—	—	—	—	—	—	—	—	290/348
БМП М2 «Брэдли» (18)	—	—	54	—	—	—	—	—	—	—	—	—	—	270/216
БРМ М3 (19)	—	6	6	6	—	—	40	—	—	—	—	—	—	118
КШМ М577А1 (20)	1	6	6	6	51	2	6	1	—	7	—	—	—	166
БТР М113А1 (21)	3	1	23	11	45	21	13	9	—	48	30	6	—	348/336
203,2-мм самоходные гаубицы (22)	—	—	—	—	12	—	—	—	—	—	—	—	—	12
155-мм самоходные гаубицы (23)	—	—	—	—	72	—	—	—	—	—	—	—	—	72
РСЗО MLRS (24)	—	—	—	—	9	—	—	—	—	—	—	—	—	9
106,7-мм самоходные минометы (25)	—	—	6	6	—	—	6	—	—	—	—	—	—	66
ПУ ПТУР «Тоу» М901 (26)	—	—	12	—	—	—	—	—	—	—	—	—	—	60/48
ПУ ПТУР «Дракон» (27)	—	—	36	—	84	—	—	—	—	24	—	—	—	288/252
ЗРК «Усовершенствованный Чаппарэль» (28)	—	—	—	—	—	18	—	—	—	—	—	—	—	18
ПЗРК «Стингер» (29)	—	—	—	—	—	75	—	—	—	—	—	—	—	75
ЗСУ «Вулкан» (30)	—	—	—	—	—	36	—	—	—	—	—	—	—	36
Вертолеты: (31)														
огневой поддержки (32)	—	—	—	—	—	—	50	—	—	—	—	—	—	50
разведывательные (33)	—	—	—	—	—	—	54	—	—	—	—	—	—	54
общего назначения (34)	—	—	—	—	—	—	30	—	—	—	—	—	—	30
РЭВ (35)	—	—	—	—	—	—	12	—	—	—	—	—	—	12

Примечание. В графах таблицы «Мотопехотный и танковый батальоны» в числителе указано количество батальонов в механизированной дивизии, а в знаменателе — в бронетанковой. То же самое относится к количеству личного состава и боевой техники в отдельных строках графы «Всего».

Personnel and Basic Armament of a U.S. Heavy Division

Key:1. Personnel and armament 2. Division command, head-quarters and head- quarters company 3. Brigade command, head-quarters and head-quarters company (3) 4. Motorized infantry 5. Tank battalion (5/6) 6. Divisional artillery 7. Antiaircraft battalion 8. Army air brigade 9. Reconnaissance and radio-electronic warfare battalion 10. Signal battalion 11. Engineer battalion 12. Rear services command 13. Anti-nuclear defense 14. Military police company 15. Total 16. Personnel 17. M1 Abrams tanks 18. Bradley M2 IFVs 19. M3 combat reconnaissance vehicles 20. M577A1 command-and-staff 21. M113A1 APCs 22. 203.2-mm self-propelled howitzers 23. 155-mm self-propelled howitzers (5/4) 24. MLRS multiple rocket launchers 25. 106.7-mm self-propelled mortars 26. M901 TOW antitank guided rocket 27. Dragon antitank guided rocket 28. Improved Chaparral surface-to-air missile systems 29. Stinger portable antiaircraft 30. Vulcan self-propelled anti-aircraft 31. Helicopters 32. Fire support 33.Reconnaissance 34. General purpose 35. Radioelectronic warfare battalion

'Note: In the columns of the table pertaining to the motorized infantry and tank battalions, the numerator indicates the number of battalions in a mechanized division, while the denominator indicates the number of battalions in an armored division. The same notations are employed for the number of personnel and combat equipment in the "Total" column?

various infantry weapons, antitank weapons, radar sets, radio stations and other military equipment.

The army air brigade (1,994) is intended for reconnaissance, for annihilation of the enemy's mobile armored targets and for transportation and assault landing missions in the interests of the division. Its composition includes a headquarters and a headquarters company (25 officers, 64 sergeants and enlisted men), and 4 battalions (reconnaissance, 2 antitank helicopter and 1 general support helicopter). The brigade is armed with 146 helicopters (50 fire support, 54 OH-58A Kiowa reconnaissance helicopters, 30 UH-60A Black Hawk general purpose helicopters, and 12 Eh-60A radioelectronic warfare helicopters).

The reconnaissance battalion includes a headquarters and five companies—headquarters, two helicopter reconnaissance (10 helicopters each—6 reconnaissance,

4 fire support) and 2 reconnaissance (each possessing 20 M3 combat reconnaissance vehicles and 3 106.7-mm self-propelled mortars); it has a total strength of 68 officers and warrant officers, 535 NCOs and enlisted men, 12 reconnaissance helicopters, 8 fire support helicopters, a general purpose helicopter, 40 M3 combat reconnaissance vehicles, 6 106.7-mm self-propelled mortars, 8 M577A1 command-and-staff vehicles, 13 M113A1 APCs, 105 motor vehicles and 226 radio stations.

The antitank helicopter battalion (1) is the principal resource against enemy tank subunits moving forward to the line of contact of the warring sides in order to increase pressure or exploit a breakthrough. It includes a headquarters and four companies—a headquarters company and three antitank helicopter companies; a total of 70 officers and warrant officers, 199 NCOs and enlisted men, 13 reconnaissance helicopters, 21 fire support helicopters, 3 general purpose helicopters, 49 motor vehicles and 147 radio stations.

The general support helicopter battalion conducts reconnaissance and radioelectronic warfare, and it transports and lands personnel and combat equipment. It includes a headquarters and five companies—headquarters, reconnaissance and radioelectronic warfare, helicopter transportation and landing, command support, and repair. The battalion has a strength of 764 personnel, 16 reconnaissance helicopters, 23 general purpose helicopters, 12 radiotechnical reconnaissance and jamming helicopters, 80 motor vehicles and 215 radio stations.

It is noted in the American press that converting divisions to the new tables of organization and outfitting the units and subunits with modern weapon systems and combat equipment will increase their fighting capabilities by an average of 70 percent in comparison with formations with the old organization. From the viewpoints of American military specialists an increase in the fire and striking power of "heavy" divisions can significantly increase the depth of destruction and the rate of penetration of the tactical defense zone and of the advance of combined-arms subunits into the enemy's operational depth. In their opinion the average marching rates may increase by 20 percent and the day's march may increase to 400 km in connection with a certain unification of the combat characteristics of armored equipment supplied to combined-arms formations. Moreover it is believed that introduction of army air brigades into "heavy" formations may significantly increase the possibilities of mechanized (armored) divisions in destroying the enemy's back-up echelons (reserves) in the zone of their combat operations (to a depth of 70 km).

Judging from statements by Pentagon representatives, the standard organizational structure of mechanized (armored) divisions examined here may undergo certain changes directed at increasing their fighting capabilities and promoting the fullest possible realization of the basic principles concerned with the use of the forces and resources of "heavy" formations in modern combined-arms combat in accordance with the conception of the "air-land operation (battle)."

Footnote 1.

The antitank helicopter battalions of "heavy" divisions, which are armed with Ah-1S fire support helicopters carrying TOW antitank guided rockets, will each possess 21 such helicopters. Their number will decrease to 18 when AH-64A Apache fire support helicopters carrying Hellfire antitank guided rockets appear in the battalions.—K. V.D

11004

Infantry Battalion of the U.S. Light Infantry Division

18010231d Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 22-23

[Article by Lt Col I. Aleksandrov: "Infantry Battalion of the U.S. Light Infantry Division"]

[Text] In its implementation of the "Army-90" program, the goal of which is to increase the striking power of the ground troops, the American command is devoting considerable attention to forming light infantry divisions—formations of a qualitatively new type intended to conduct combat operations predominantly in poorly engineered theaters of military operations as well as in urban areas, mountains and forests. It is noted in the foreign military press that its main fighting subunit is the infantry battalion (some sources call it the light infantry battalion), which consists of a headquarters, a headquarters company and three infantry companies.

The headquarters (31 persons) performs the tasks of planning, organization and control of the combat operations of organic and attached subunits, it maintains personnel records, and it organizes logistical support. It possesses four M249 machineguns (5.56 mm caliber) and an M966 1.25-ton cross-country truck.

The headquarters company (140 persons) includes an administrative section (8) and a headquarters section (8) as well as six platoons—reconnaissance (18), signal (15, M966 truck with a 0.75-ton trailer), antitank (20, four sections, each possessing one TOW antitank guided rocket launcher mounted on an M966 truck, and six M966 trucks and one trailer), mortar (27, four sections, each with one 106.7-mm mortar mounted on an M966 truck, and eight M966 trucks and two trailers), medical (27, five M966 trucks, two trailers) and support (17, two sections: motor vehicle and motorcycle, with a total of 12 M966 trucks, 8 trailers and 16 motorcycles).

The infantry company (130 persons) contains the company command (3), an administration platoon and three infantry platoons. The administration platoon (25 persons) has the following sections: administration, three mortar (each possessing one M224 60-mm mortar) and six antitank (each possessing one Dragon antitank guided rocket launcher). The infantry platoon (34 persons) includes an administration section (7, two M60 7.62-mm machineguns and five M16A1 5.56-mm automatic rifles) and three infantry squads of nine persons each (squad commander, two fire group commanders, two machinegunners, two grenade throwers and two riflemen), two M203 40-mm antitank rocket launchers, two M249 machineguns and seven M16A1 rifles. A company possesses a total of 60 M60 and 18 M249 machineguns, 19 M203 antitank rocket launchers, 3 M224 mortars, 6 Dragon antitank guided rocket launchers, over 100 M16A1 rifles and other armament.

But in all, judging from reports in the foreign press, an infantry battalion in a light infantry division contains 561 personnel, 22 antitank guided rocket launchers, 13 mortars, 76 machineguns, 58 M203 antitank rocket launchers, 34 M966 trucks, 15 motorcycles, 15 0.75-ton trailers and other weapons and combat equipment.

It is reported in the American military press that the infantry battalion is completely airliftable, and it may be carried not only by military transport airplanes but also by helicopters—for example the UH-60A Black Hawk. Its organization is unique in that it possesses only two forms of transportation resources (motor vehicles and motorcycles) concentrated in a support platoon in the headquarters company and used centrally in accordance with the plan of the battalion commander. The question of replacing M60 machineguns by the M249 in order that all infantry weapons in the battalion would be of the same caliber—5.56 mm—is presently under examination. There are plans for replacing the two M60 machineguns in the administration sections of the infantry platoons by four M249 machineguns.

As a rule an infantry battalion fights within the composition of a brigade, it operates in its assault echelon or it is held in reserve, and it advances on the main or a secondary axis. In certain cases the battalion can perform a mission independently. In the opinion of Western specialists it can be attached to an armored or mechanized brigade in the European theater of war.

During combat, the infantry battalion may be used as the basis for creating a battalion tactical group. If a light infantry division is reinforced by separate brigades (armored or mechanized, and artillery), the resulting group would contain up to three infantry companies and one or two tank companies, one or two artillery batteries, and engineer, reconnaissance and other combat support subunits.

In offensive action, it is noted in the foreign press, a battalion is capable of performing the missions of penetrating enemy defenses through rough terrain and striking the enemy's flanks and rear, and it can be used as a tactical aeromobile assault force. It is believed that it can advance on a front from 2 to 3 km wide. In defense, the battalion is to be used chiefly in combat operations in population centers, in forested and mountainous terrain, and on marshy ground. The dimensions of a battalion's defense area may attain a front of 3-5 km and a depth of 2-2.5 km.

11004

U.S. Air Force Reserves

18010231e Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 31-36

[Article by Col V. Grebeshkov: "U.S. Air Force Reserves"]

[Text] Besides increasing the fighting power of regular units, the U.S. Air Force command constantly devotes considerable attention to developing its reserves. They are viewed as the basis of rapid mobilization of air forces during war preparations, of reinforcement of air groupings and of replacement of combat losses chiefly in the initial stage of fighting.

It is emphasized in the American press that the significance of the reserves increased especially in connection with the "unified forces" conception, adopted by the USA in the early 1970s and in effect to the present time, the essence of which lies in the use of regular forces, reserves and civilian employees in their composition as a single whole to carry out missions posed to the armed forces, and particularly to the air force. This conception is aimed at the most economical and effective use of all available resources—human, material and financial.

The main goal of measures implemented by the Pentagon in regard to developing air force reserves is to increase their combat readiness to the level of the regular air force, in connection with which more than $2 billion is spent each year on their maintenance. Foremost among these measures are introduction of modern aviation equipment and weapons into reserve components, improvement of their organizational structure, reinforcement of their combat training and so on.

Organizationally, the air force reserves consist of national guard units and subunits and the Air Force Reserve Command, as well as individual reservists.

Some general provisions concerning U.S. Air Force reserves (personnel strength, recruitment procedures and service requirements, mobilizational readiness etc.) and

with the organization and composition of the national guard air forces and the Air Force Reserve Command, and the combat training of their units and formations are presented below, based on data published in the foreign press.

General Provisions

The personnel strength of the air force reserves is 336,000, of which 170,000 are in units of the organized air force reserve (110,000 in the national guard air forces and around 60,000 in the Air Force Reserve Command) and 166,000 are individual reservists.

As in the regular air force, reservists are recruited on a voluntary basis by signing contracts for a particular period of time. The national guard air forces and the Air Force Reserve Command are staffed by volunteers from 17 to 35 years old if they had not served in the armed forces previously, while for persons who had served in the army previously the upper age limit is increased to 59 years. Officers are selected from among former regular officers and graduates of ROTC courses in civilian educational institutions. Enlisted men and NCOs are recruited from among former servicemen and from among civilians who had undergone basic training in the regular air force for a period of not less than 12 weeks.

The air force reserves are divided into three categories in relation to mobilizational readiness and conditions of mobilization—1st, 2d and 3d priority.

First priority reserves are combat ready. They include personnel in the national guard air forces and the Air Force Reserve Command, as well as certain reservists who had undergone the appropriate training, who served a sufficient time in the regular air force and who signed a contract to serve in the 1st priority reserves. This category of reserves contains a total of 224,000 persons (to include 54,000 individual reservists). In peacetime they are employed in civilian jobs, and they undergo systematic combat training.

Years served in the 1st priority reserves count toward a pension. As in the regular air force, reservists of this category receive promotions in rank and position. They may be mobilized by order of the president for a period of up to 2 years, while in the event of war they may be retained by decision of Congress until its conclusion or for another 6 months beyond.

It is reported in the Western press that 1st priority reserves are mobilized within 2 days. Moreover the bulk of the subunits of the organized reserve must be combat ready in as little as 24 hours after mobilization is declared, and after 72 hours they must be ready to perform missions within the composition of forward groupings of American armed forces in Europe, in the Pacific or in any other region of the world. Second priority reserves contain individual reservists who had completed their service in units of the regular air force or the organized reserve, and who decided to continue as this category of individual reservists. They do not usually undergo combat training, they remain on record until 60 years of age, and they may be mobilized only by decision of Congress in the event of a national emergency or the beginning of war. The 2d priority reserves contain a total of around 29,000 persons.

Third priority reserves consist of persons who had completed not less than 20 years of service in the regular air force or the organized reserve and who retired. They do not undergo combat training, they also are kept on record until 60 years of age, but they are called up for service on last priority, and only in the event of war. The strength of this category of reserves attains 85,000 persons.

Air force reserves consist mainly of the organized air force reserve, the units and subunits of which are fully manned with personnel and aviation equipment. They also possess the same organizational structure as regular formations, and personnel wear the same uniform.

The principal unit of the organized air force reserve is the air wing, which as a rule contains subunits of the same air force command. A wing may consist of from one to several air groups (each containing one squadron). Units and subunits are based in peacetime as individual squadrons—that is, an air group and its squadron or an air wing headquarters and one squadron are based at each airfield (these may be air force bases or civilian airports).

According to data published in the foreign press the fighting power of organized air force reserves of the USA increased significantly over the last 10 years. They now have a strength of more than 2,100 airplanes in combat and auxiliary aviation, to include: around a third of all of the air force's tactical fighters and forward air control airplanes, two-thirds of air defense fighters, up to 55 percent of tactical reconnaissance aircraft and around 20 percent of the tankers. Over half of the demand for tactical air transportation is also satisfied by subunits of the organized air force reserve.

The command of the U.S. Air Force is devoting constant attention to improving the organized reserve's aircraft fleet in connection with its adoption of the "unified forces" conception. In contrast to previous years, when obsolete airplanes were sent to air force reserve components, today they are equipped with airplanes of the same types as those possessed by the regular air force, and they are subjected to updating simultaneously with similar measures conducted in the regular forces. A large number of subunits of the organized air force reserve have already received modern F-16 tactical fighters and A-10 attack aircraft directly from the manufacturing plants. Deliveries of new airplanes to units of the organized air force reserve are continuing.

High occupational training of aircrews and mobilizational readiness of subunits in the organized air force reserve (most squadrons are required to be combat ready 24 hours after mobilization is announced) are ensured by the combat training requirements established for them. The training schedule foresees 48 days of training exercises (one a week) and one 15-day training period in which functional responsibilities are carried out in their full volume. In addition aircrews are allocated up to 36 days (4 hours a day) for additional flight training.

Flights are organized on Saturdays and Sundays as a rule, but they can also be conducted on other days of the week depending on the work schedule of reservists in their civilian jobs—that is, during time off of their principal jobs.

Subunits and units of the organized air force reserve are able to engage in practical daily activities because their composition always includes a certain number of personnel from the regular air force, and because airplanes are maintained by civilian technicians in civil service. Servicing aviation equipment and maintaining it combat ready are the principal civilian jobs of this category of persons. In this connection these technicians are assigned permanently to their subunit, and they are subject to mobilization within the time established for the given subunit.

High combat readiness of air subunits and units of the organized reserve is ensured by the rather high norms established for flying time. Thus crews in tactical aviation must fly a minimum of 120 hours to satisfy the established training minimum, and the maximum flying time is 135 hours per year.

According to reports in the American press, in 1986 subunits and units of the organized air force reserve logged 584,000 hours in the air (435,000 hours in the national guard air forces and 149,000 hours in the Air Force Reserve Command). In 1987 the total flying time logged by airplanes of the organized reserve was determined to be 585,000 hours. The specific training programs for crews in different branches of aviation are written by the principal air commands of the regular air force to which they are assigned.

National Guard Air Forces

The national guard air forces are a part of the state armed forces subordinated to state governors, and they are concurrently the principal component of the organized reserve of the regular air force. In their role as state armed forces they are intended to maintain public order, to provide assistance to the public in natural disasters and to execute other missions.

All problems concerning the national guard air forces are analyzed and resolved by a national guard office which answers directly to the U.S. president and which oversees both the air force and the ground troops (it contains directorates representing these branches of the armed forces, the chiefs of which are subordinated to the headquarters of the air force and the ground troops respectively).

The state national guard units are administered by adjutant generals (subordinated to the chief of the office of the national guard) by way of their air force deputies, and by military affairs administrations. The latter organize the peacetime activities of air force subunits in the national guard.

In the event a national emergency is declared or war begins, the national guard air forces and the Air Force Reserve Command become the principal source of reinforcements for the regular air force. National guard subunits are required to mobilize within 24 hours, and the subsequent rate of their deployment is the same as in the regular air force (a period of 3 days is established for a significant number of air squadrons). In order to satisfy these requirements, units and subunits of the national guard air forces are assigned in peacetime (that is, prepared for transfer) to the principal air commands of the U.S. Air Force: SAC, TAC, MAC and others. The command headquarters write the combat training programs for units of the national guard air forces and monitor their execution and the degree of combat readiness.

Judging from reports in the foreign press the national guard air forces consist organizationally of 24 air wings and 67 air groups, which contain 92 squadrons of different air commands and which possess 1,640 airplanes (see table). Moreover their composition includes over 270 ground units and subunits (8 signal groups and 65 signal detachments, 3 tactical air control groups, 39 weather detachments, 19 electronic equipment installation and maintenance subunits, 92 construction detachments, 19 hospitals, 24 outpatient clinics and so on). All units and subunits of the national guard air forces are stationed in the 50 American states, in the District of Columbia, on Puerto Rico, Guam and the Virgin Islands (at 89 air bases and airports as well as 66 ground auxiliary unit and subunit stations).

Each year the federal budget allocates over $1 billion for maintenance of national guard air forces. Some of the expenses of logistical support of the units and subunits are covered by the budgets of the appropriate states.

The leadership of the U.S. Air Force emphasizes that national guard air forces have been playing an increasingly larger role in American "unified forces" in recent years. Their fighting strength presently includes all American fighter-interceptors and reconnaissance aircraft of the organized air force reserve (73 percent and 55 percent, respectively, of the total number of such aircraft in the regular air force) and a proportion of the tactical

СОСТАВ ВВС НАЦИОНАЛЬНОЙ ГВАРДИИ

(1) Наименование самолетов и вертолетов	(2) Количество	
	эскадрилий (3)	самолетов (4)
Тактические истребители и штурмовики: (5)		
F-4C	12	312
F-16	2	36
A-10 (6)	5	120
A-7D и K	14	360
F-15	3	48
Тактические самолеты-разведчики (7)	6	126
Истребители-перехватчики: (8)		
F-106	4	72
F-4C и D	7	126
Самолеты-заправщики KC-135 (9)	13	104
Самолеты РЭБ EC-130 (10)	1	8
Стратегические транспортные самолеты: (11)		
C-5	1	5
C-141	1	4
Тактические транспортные самолеты C-130 (12)	18	180
Самолеты наведения авиации OA-37 (13)	3	75
Самолеты и вертолеты поиска и спасения (14)		
CH-130	2	8
HH-3E	—	11
Учебные самолеты T-33 (15)	—	51
(16) Всего	92	1648

Composition of the National Guard Air Forces

Key: 1. Airplanes and helicopters 2. Quantity 3. Squadrons 4. Airplanes 5. Tactical fighters and attack aircraft 6. and 7. Tactical reconnaissance 8. Fighter-interceptors 9. Tankers 10. ECM aircraft 11. Strategic transport aircraft 12. Tactical transport aircraft 13. Forward air control aircraft 14. Search and rescue aircraft and heliocopters 15. Training aircraft 16. Total

fighters (24 percent), tactical transport aircraft (32 percent), tankers (17 percent) and search and rescue aircraft and helicopters (14 percent)—moreover of the same types as those possessed by the regular air force.

For example, of the subunits assigned to Tactical Air Command, five squadrons are equipped with the latest A-10 attack aircraft, obtained directly from the aviation enterprises (previously, reserve air force components received only obsolete aviation equipment from regular units), two squadrons are equipped with F-15 fighters (Figure 1 [figures not reproduced]) and two squadrons are equipped with F-16s. The flow of new combat equipment into the national guard air forces is continuing. In addition F-4 tactical fighters presently in the inventory are being modified to carry the latest modifications of Sparrow air-to-air guided missiles. The aviation equipment of three (out of 14) A-7 attack aircraft squadrons (Figure 2) is being modernized. In particular a forward-looking infrared system is being installed in the airplanes, giving them a night-time combat capability.

Tactical air subunits of the national guard air forces are assigned to the Tactical Air Command, and they are accounted for in operational plans as reinforcements for U.S. Air Force groupings in Europe, in the Pacific and in other regions of the world.

According to reports in the Western press four A-7D squadrons as well as air reconnaissance (RF-4C) and ECM aircraft (EC-130) subunits of the national guard air

forces are to be allocated to the "rapid deployment forces" within the framework of the combined central command of the U.S. Armed Forces.

Steps are being taken to enhance the combat capabilities of tanker subunits in the national guard air forces (they satisfy the air force's demand for air-to-air refueling on the same constant basis as do the corresponding subunits of the regular air force). In particular, a program for replacement of obsolete J57 engines by new ones (JT3D) in KC-135s is nearing completion. These new engines increase the refueling capabilities of the airplanes by 12-14 percent while concurrently reducing their noise level (by almost 60 percent) and diminishing the smoke trail (by 90 percent).

The 11 fighter-interceptor squadrons of the national guard air forces included in the strategic defense forces (which possess a total of 16 squadrons) are playing a significant role. They are based along the northern border of the USA and along the Pacific and Atlantic coasts. These squadrons participate in the American-Canadian system for aerospace defense of the North American continent (NORAD), in which they are intended to fight airborne targets jointly with Canadian CF-18 (see color insert) and CF-5 fighters. TAC's 1st Air Army is responsible for the combat training and combat readiness of the squadrons (they are assigned to it in the mobilization plans). The requirements imposed on these squadrons do not differ from those imposed on similar subunits of the regular air force. They also allocate crews on a daily basis to the alert air defense forces, which maintain a 5-minute take-off readiness. The F-106s and F-4Cs of six of them based in the states of Massachusetts, Florida, New Jersey, Arizona, Vermont and Montana are to be replaced by modern F-16 fighters.

As far as military airlift aviation is concerned, in 1986 the national guard air forces began receiving C-5 and C-141 strategic transport aircraft from the regular air force (two squadrons are now equipped with them). Concurrently the fleet of tactical transport aircraft has been renewed to a significant extent (obsolete C123s have been dropped from the inventory, and the latest series and modifications of C-130s have been delivered).

Besides air subunits, the ground subunits of the national guard air forces, mentioned above, are playing a great role in the "unified forces." In particular they possess 65 percent of the personnel and corresponding equipment operating in the communication systems of the U.S. Air Force. Administrative subunits of the national guard's tactical aviation represent around 60 percent of the total strength of such forces in the U.S. Air Force as a whole

(To be concluded)

11004

Training of Air Crews for the French Air Force

1801023lf Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 36-38

[Article by Col P. Ivanov]

[Text] Implementing measures directed at increasing the fighting power and combat readiness of its formations, units and subunits, in addition to supplying the latest aviation equipment and weapons to them, the command of the French air force is devoting considerable attention to personnel training. In the opinion of French military experts the effectiveness of the combat use of aircraft and their weapon systems depends in many ways on the occupational training of both ground specialists and aircrews. The training of personnel for the French air force is organized on the basis of this principle, as well as with regard for the complexity of modern warplanes and of the missions posed to military aviation.

It is noted in the foreign press that the responsibility for training personnel for the French air force is assigned to the air training command, which possess over 15 military schools (including officer, NCO, navigator and staff schools), centers and separate subunits.

The officer school (located in Salon-de-Provence) accepts French citizens from 17 to 22 years old possessing a secondary education (emphasizing physics and mathematics) and physically fit for flying.

Candidates are first subjected to psychological and technical tests, the results of which are scored on the basis of a 20-point system. Those who score not less than 12 points are allowed to proceed to the next phase of selection, which occurs at the basic flight training school in Clermont-Ferrand (NCO school) and which consists of three types of tests (examinations):

military sports, in the course of which the candidates are subjected to an intense physical load and make four parachute jumps;

theoretical—knowledge of the exact sciences, mainly in physics and mathematics, is tested; flight, in the course of which the candidates make 17 flights of up to 1 hour each in a CAP-10 piston-engine trainer.

The most promising candidates are enrolled in officer school in Salon-de-Provence, while those with poorer results remain in Clermont-Ferrand in the air force NCO training program (pilots undergo training here for naval aviation as well). One unique feature of training in the officer school noted by foreign military reviewers is that future flying, engineering and technical officers follow the same program, with specialization occurring only in the third year.

The program for the first 2 years of training includes general military training (up to the platoon commander level) and theoretical, physical and flight training. The cadets study the following disciplines in the course of theoretical training: mathematics, mechanics, nuclear physics, electronics, principles of computer technology and computer operating procedures, aerodynamics, thermodynamics, communications technology, design and some others.

Cadets who successfully complete the second year of training are awarded the initial officer rank of lieutenant, and they receive an air force engineer diploma. On becoming lieutenants they are released from their requirement to reside in the barracks. During the training the instructors constantly study the individual qualities of the school cadets, as a result of which at the end of the second year the cadets are finally divided into flying, engineering, technical and administrative personnel. In correspondence with this division the students specialize in separate (specialized) courses of study in the third year.

In particular, future flying personnel study the following disciplines during the third year: electronics, airplane equipment, aircraft instrumentation, navigation systems and radionavigation, meteorology, air traffic control, the theory of aerial gunnery and an English language course (adapted). The total duration of the lectures and theoretical study is 400 hours. The program foresees flights aboard a Magister jet trainer. The total flying time logged by each student averages 150 hours. This includes 25 hours to learn take-off, flying in a circle and landing, 35 hours to learn the elements of aerobatics, 16 hours to learn flying in simple meteorological conditions, 12 hours to learn the most complex elements of flying (on the basis of an individual plan drawn up by instructors for each student), 36 hours to learn instrument flying, 10 hours to learn flying at night and 16 hours to learn combat applications. These students undergo flight training in the 312th Air Training Group (Salon-de-Provence Air Base).

After completing this program the students are awarded the rank of senior lieutenant, and approximately two-thirds of them are sent to the fighter pilot (1) training center in the city of Tours, while the rest are sent to Avord, where pilots are trained for transport aviation. Students who are unable to complete this program are transferred to a military aviation school for navigators in Toulouse. Here they train as navigators for 58 weeks. Having successfully completed this training course, as a rule they are assigned as navigators to the crews of Mirage-4 strategic bombers (Figure 1 [figures not reproduced]), military airlift or other crew-operated airplanes in the French air force (for example the Transall, the KC-135F and so on).

It was reported in the Western press that in addition to the training of professional pilots in officer school, flying personnel are also trained in the NCO school in Clermont-Ferrand, though in an abbreviated program. The most promising graduates of this school are sent to the fighter training center in Tours, where they continue their training aboard the Alpha Jet together with officer school pilots. Some of them are offered the possibility for entering the officer school in Salon-de-Provence, while the rest are sent to transport and helicopter aviation training centers (in the cities of Avord and Chamberet respectively).

Students in the fighter training center (Tours) learn to fly the Alpha Jet combat trainer (the program includes 87 hours of flying aboard the airplane and around 30 hours in a trainer). They undergo their flight training in the 314th Air Training Group.

In the final phase of their training, prior to their assignment to different combat subunits, pilots undergo additional training in various forms of combat use (aerial combat, firing at ground targets, bombing, combat maneuver, group flight and so on) at the combat training center in Caseau], in the 8th Fighter Air Training Squadron. The latter contains two air groups, "Saintonge" and "Niece," equipped with 34 Alpha Jet combat trainers. The squadron's flight instructor staff (there are 18 pilots in each group) is formed out of experienced pilots from combat units, subdivided into permanent and temporary duty. The former serve in the squadron as instructors for 2-6 years, while the latter serve for up to 2 years. In the opinion of French military specialists constant renewal of the flight instructor staff makes it possible to impart to the young pilots the diverse flying experience accumulated in the air force's line units.

Analyzing the aircrew selection and training system in the French air force, foreign military aviation experts note that France possesses a well-tuned procedure for revealing promising candidates and screening out those unfit for flying in the initial phase of training. According to data in the foreign press up to 90 percent of the fighter pilot candidates are screened out in the very first phases of selection and training, and only around 10 percent actually become fighter pilots. It is emphasized in this case that occupational reorientation of cadets undergoing training depending on their individual features and capabilities is extremely flexible.

However, despite such a high assessment, considering the continually increasing complexity of aviation equipment entering the air force and the existing shortcomings in the pilot training system, the air force command continues to devote considerable attention to improving the training programs and to outfitting training institutions and centers with various modern ground equipment, including the most complex integrated trainers, and it is modernizing the aircraft fleet used for aircrew training. In particular a new trainer, the Epsilon (Figure 2), has been developed for the country's air force.

Later on, students who complete their flight training cross-train to combat aircraft. In particular young pilots (by this time they have logged up to 400 hours of flying

time in all types of airplanes) begin to master one of the types of warplanes available in combat training squadrons (the Mirage-3 in the 1st Combat Training Air Squadron of the 2d Air Fighter Squadron, the Mirage F.1 in the 3d Combat Training Air Squadron of the 5th Fighter Air Squadron, and the Jaguar in the 3d Combat Training Air Squadron of the 7th Fighter Air Squadron). The cross-training program takes 8 weeks, and includes ground training (60 hours), simulated flying in a ground trainer (15-20 hours) and flight training (40 hours). Following the cross-training course a personal flight record is compiled for each pilot. This record reflects his strong and weak sides and provides conclusions and recommendations on the pilot's subsequent utilization, on the basis of which he is sent to a combat subunit.

Pilots and other crewmembers are broken in and undergo further improvement in the line units. If they are required to cross-train from one type of airplane to another, they are sent to the corresponding training centers and subunits.

As is noted in the Western military press, owing to a well-tuned selection, training and cross-training system, the French air force is basically manned by extremely qualified flying personnel, which ensures high combat readiness and a sufficiently low rate of accidents (at the fault of aircrews) in the air units and subunits.

Footnotes 1.

This concept includes the pilots of air defense fighters and tactical fighters, including tactical reconnaissance aircraft.

11004

English Experimental Fighter

18010231g Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 38-40

[Article by Col N. Nikolayev]

[Text] Programs to develop a new generation of fighters for the 1990s are being carried out today in the principal countries of the imperialist NATO bloc.

English military aviation specialists believe that fighters of the future should have the capability to begin aerial combat beyond the limits of visual contact with the target, using medium-range air-to-air guided missiles, and then to go over to close aerial combat using tactical air-to-air all-aspect guided missiles and guns.

In the case of aerial combat beyond visual contact with the target, the fighter should begin accelerating from combat patrol speed to maximum speed as quickly as possible so as to impart the greatest possible kinetic energy to its medium-range missiles at the moment they are launched, after which it must carry out an abrupt maneuver, without losing its kinetic energy, with the purpose of evading the enemy's air-to-air guided missiles. In closer aerial combat using all-aspect missiles, it would be preferable to launch them at the front hemisphere of the enemy aircraft. A high turning speed is important to attainment of the most advantageous position by the fighter and to the earliest possible launching of a guided missile.

Thus aerial combat beyond visual contact with the target requires a fighter with high acceleration characteristics and good maneuverability at supersonic speeds, while close aerial combat requires maximum available lifting force and a high thrust-to-weight ratio, so that energy the fighter loses as it turns may be recovered quickly. In other words the fighter must possess high attainable and sustainable angular turning velocities and specific excess energy.

Judging from reports in the foreign press the English airplane building company British Aerospace built the EAP (Experimental Aircraft Programme) experimental one-seat airplane with the participation of West Germany's Messerschmitt-Bolkov-Blohm and Italy's Aeritalia to study problems associated with creating a highly maneuverable fighter for aerial combat. The program of its construction is estimated at 180 million pounds, of which 100 million were allocated by the companies and 80 million were contributed by Britain's defense minister. The EAP is to be used to test the aerodynamics of a supersonic fighter, the active control system of a statically unstable aircraft, combined digital electronic apparatus and the latest cockpit equipment, and a progressive aircraft design widely utilizing composite materials. Moreover there are plans to conduct flying experiments having the purpose of reducing the infrared signature and effective scattering area, which is to be done by using radiosorbent materials on some of the airplane's surfaces.

The EAP is equipped with thin delta wings, with swept-back anterior aerodynamic surfaces and with a tail assembly consisting of one vertical stabilizer and no horizontal stabilizer (see figure [not reproduced]). The wing area is 48 square meters, the wingspan is 11.7 meters, the sweep-back of the wing's leading edge is 57at the base and 45at the tip, the length of the airplane is 17.53 meters, and its height is 5.52 meters. The anterior aerodynamic surfaces (having a span of 4.5 meters) are fully controllable, which imparts static instability and, consequently, high maneuverability and the possibility for active control.

The airplane's pitch is controlled by the anterior aerodynamic surfaces, the four-section leading-edge flaps and flaperons located on the wing's trailing edge. Deflection of the anterior surfaces, the leading-edge flaps and the flaperons is programmed depending on flying speed and angle of attack, which makes it possible to attain

optimum aerodynamic quality under all flying conditions. The pitch controls must allow for sustained flight at angles of attack up to 30Roll control is maintained by the flaperons, using all sections at low flying speeds and the inner sections at high speeds. Course is controlled by a conventional rudder mounted on the vertical stabilizer. The air brakes are located above the tail section of the fuselage.

Quadruple redundancy of the digital electronic remote flight control system, which is combined with the engine control system, is employed in the EAP. It imparts artificial stability and high maneuverability, and it deflects the controls in such a way as to achieve optimum aerodynamic quality in all flying modes and within the entire range of flying speeds and altitudes.

This system is composed of four flight control computers, two computers that calculate aerodynamic parameters, four aircraft motion parameter sensing units and four aircraft control drive system control units. Commands to control anterior aerodynamic surfaces, air intake adjusting flaps and leading-edge flaps are transmitted directly from the flight control computer, while commands controlling the flaperons and the rudder are transmitted from the computer by way of the drive control units. Piloting and navigation information, data on the state of the airplane, its equipment and its systems, commands controlling the work of various systems and warning signals are displayed on a piloting and navigation indicator with a 30horizontal and 18vertical field of vision, and on three polyfunctional color indicators.

It is noted in the foreign press that much of the airplane structure is made of composite materials with embedded carbon fibers (25 percent of the structural weight), as well as aluminum and stamped titanium and aluminum-lithium alloys. Each wing frame consists of 12 longerons and 6 ribs. The front and rear longerons are made from an aluminum alloy, while the rest are made from composite material. The ribs in the middle of the wing and at its roots and tip are made from composite material, while the rest are made from aluminum or titanium alloy. The skin over the lower surface of the wing torsion box (made from composite material), is glued to the longerons and ribs, while the skin over the upeer surface (also made from composite material) is removable, and it is secured to the longerons by bolts. The layers of carbon fibers in the upper and lower skin panels are formed in such a way (with up to 200 layers at the wing root and significant reduction of the number of layers toward the wingtips) as to impart an amount of torsion resistance to the torsion box which would ensure optimum distribution of the stresses caused by twisting of the wings in response to the aerodynamic load in the case of minimum drag. The leading-edge flaps are made from aluminum alloys, while the flaperons are made from aluminum-lithium alloy.

The torsion boxes of the anterior aerodynamic surfaces are made from composite material, while those of the leading and trailing edges are made from aluminum alloys.

The fuselage, which is shaped with regard for the law of cross-sectional areas in order to reduce wave resistance at supersonic speeds, has a conventional design. The fairing at the nose of the fuselage, which houses the flight research apparatus, is made from radioparent material. The side panels of the fuselage near the cockpit, the floor of the cockpit structures and the lower part of the fuselage beneath the cockpit are made from composite materials. The tail section of the fuselage, the vertical stabilizer and the rudder are from the Tornado airplane, and fuselage structures between the engines are made from titanium alloy by ultraplastic stamping and diffuse cementing.

The EAP's propulsion unit consists of two RB.199 Mk 104D turbofan engines generating 7,500 kg each in afterburner mode. The two-dimensional engine air intakes are located beneath the front part of the fuselage. The lower panel of each air intake is a hinged flap that adjusts the airflow. It deflects downward at low speeds and upward at high flying speeds. The bottom of the nose section of the fuselage is shaped in such a way that an unperturbed airflow would enter the air intakes within the entire range of flight conditions. An ogival partition on the upper edges of the air intakes keeps the boundary layer from the lower surface of the fuselage from entering the air intake. Engine fuel is stored in fuselage and integral wing tanks that completely fill the wing torsion boxes. The airplane is devoid of armament, including radar and a fire control system, but as is noted in the Western press, this equipment may be installed in the course of the tests. The flight tests are to be carried out with mock-ups of air-to-air guided missiles—four medium-range AMRAAM missiles (two will be suspended beneath the air intakes and two will be attached to the engines along the sides of the air intakes), and two ASRAAM short-range missiles suspended from launchers beneath the wingtips.

Flight tests were started on the EAP in August 1986. In the first flight, which lasted 67 minutes, the airplane generated a maximum speed of up to Mach 1.1 at an altitude of 9,000 meters, and normal acceleration to 4g. By the end of August it had completed 29 flights for a total of 27 flying hours; then flying was interrupted to permit inspection and replacement of an engine that was damaged by foreign objects, and for preparation of the airplane for an air show in Farnborough.

According to reports in the foreign press the results of flight tests with the EAP are to be used to create a so-called European fighter aircraft, the EFA, which is being developed jointly by Great Britain, the FRG, Italy and Spain.

11004

American Aircraft ECM Resources

18010231h Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 40-46

[Article by Maj S. Leonov, candidate of technical sciences, and Maj V. Bogachev, candidate of technical sciences]

[Text] The aggressive course of imperialist circles of the USA and its NATO allies emphasizes the importance of attaining military and technical air superiority over the air defenses of Warsaw Pact states. With this purpose in mind, in addition to improving the combat characteristics of the airplanes and increasing their firepower, NATO is constantly expanding the combat capabilities of aviation by making increasingly more intensive and diverse use of ECM resources.

In the opinion of foreign military specialists the combat capabilities of aviation and air defense systems are determined in many ways in the present stage of technological development by the characteristics of the radioelectronic resources they contain. The objective of radioelectronic warfare is to reduce their effectiveness or completely exclude the possibility of their use by the enemy. Two most characteristic stages can be conditionally distinguished in the combat use of aircraft ECM resources: detection of electromagnetic radiation put out by the radioelectronic resources contained within the air defenses of the opposing side; radioelectronic suppression of air defense systems using active and passive interference, or their destruction by fire using antiradar missiles.

The first stage in an aircraft's encounter with radioelectronic air defense resources is to detect the fact itself that the aircraft is being subjected to electromagnetic illumination by these resources. This task is carried out by receivers that detect radar illumination (detecting receivers). Warning an airplane crew that it is being illuminated by enemy air defense radar is felt to be a relatively complex task, in view of the large diversity of radar systems used today in theaters of military operations, and in view of the presence of a sizable number of sources of electromagnetic radiation from which signals may be received. In the earliest stages of an attack, the detecting receiver identifies signals from early warning radar with the purpose of providing warning on the approach of enemy aviation. As the target comes closer and when air defense fighters and batteries of surface-to-air guided missiles enter into combat with the attacking airplane, signals from their radar systems are transmitted to the detecting receiver. It is believed that the receiver should process signals only from those radioelectronic resources which are a direct threat to the airplane at the given moment.

The simplest detecting receivers provide information to the aircraft crew by means of visual and acoustic indicators. In receivers of greater complexity cathode-ray tubes and other resources for displaying analogue and digital information are used to display the characteristics of illuminating radiation. As a rule the receivers are coupled with the controls of the aircraft's jamming resources. A brief description of the principal American detecting receivers is given in Table 1.

Principal American Detecting Receivers

AN/ALQ-78: Possesses an antenna rotating at high rpm and forming an omnidirectional beam pattern. The processing device automatically determines the bearing to the radiation source. Installed in P-3C Orion basic patrol aircraft and A-4 and A-6 attack aircraft.

AN/ALQ-133: ELINT station operating in the frequency range up to 18 GHz. Bearing to radiation source determined with a precision of 0.5 in a 90angular sector (operation in a 120angular sector with reduced precision is possible). Installed aboard RV-1D, 0V-1 Mohawk and A-10A Thunderbolt-2 aircraft.

AN/ALQ-153: Pulse-Doppler detection and protection radar. Intended for installation chiefly aboard B-52 G and H bombers as well as F-111, F-14, F-15, F-16, F-18 and A-10 aircraft.

AN/ALQ-156: Small Doppler radar capable of automatically transmitting commands to discharge infrared traps.Receiver with two antennas and control unit weighs a total of around 20 kg. May be installed aboard the RU-21 aircraft, the CH-47 helicopter or other types of aircraft.

AN/ALR-32: Intended to detect radiation from ground and aircraft radar. Possesses a 360azimuth angular field of view. Installed aboard E-66, RB-66 and B-52 aircraft. AN/ALR-34 Intended to detect radiation in the 20-60 GHz frequency range. May be installed aboard EC-121, EC-135 and RC-135 aircraft. AN/ALR-39/41: Installed aboard F-111 and FB-111 aircraft. Gradually being replaced by the AN/ALR-62 receiver.

AN/ALR-45: Multichannel detector-type receiver operating in the 2-14 GHz frequency range. Possesses four helical antennas, each of which is equipped with a high frequency unit, and a common signal processor. Installed aboard A-6A, A-7E, F-4J and F-14 aircraft.

AN/ALR-46: Operates in the 2-20 GHz frequency range. The first American digital receiver to be used in a radar illumination warning system. Installed aboard many types of tactical fighters.

AN/ALR-47: Possesses digital signal processing devices and interfering signal identifying and suppressing devices. Monopulse acquisition of data on illumination direction. Installed aboard S-3A Viking, F-4F and F-5. Antennas are positioned wingtip cantilevers.

AN/ALR-50: Surface-to-air missile launch detecting station operating in the 4-20 GHz frequency range. Installed aboard A-4, EA-6B, A-7, RF-4B, F-4N and F-14 aircraft.

AN/ALR-52: Detector-type multichannel receiver capable of"instantaneous frequency measurement." Operates in the 0.5-18 GHz frequency range. Capable of measuring radar parameters of continuous and pulsed signals, and of determining bearing to the illuminating radar. Intended for installation aboard heavy aircraft, for example the EP-3E.

AN/ALR-56: Operates in the 2-20 GHz frequency range, separated into a lower (2-10 GHz) and upper (10-20 GHz) part. Signals at low frequencies are received by an omnidirectional whip antenna, while signals at high frequencies are received by four helical antennas. Digital signal processing. Individual sections of the 0.5-1 and 1-2 GHz subranges are monitored in addition to the main operating frequency range. Installed aboard F-15 Eagle, B-52, RF-4 and A-7D aircraft. Controls the AN/ALQ-135 aircraft ECM system.

AN/ALR-59: Automated four-band superheterodyne receiver. Operates in the 0.5-18 GHz frequency range. Designed for the E-2C Hawkeye AWACS aircraft. Possesses 16 antennas (4 for each of four frequency ranges), which together provide a 360azimuth field of view. All of the system's detecting receivers are controlled separately,making it possible for simultaneous operation in all frequency ranges and scanning sectors. Information obtained on the direction of illumination, pulse duration and repetition frequency and signal amplitude and special marks are processed by a computer and transmitted to the aircraft's central processor.

AN/ALR-62: Intended for installation aboard F-111, FB-111 and EF-111 aircraft.

AN/ALR-66: Detector-type receiver capable of "instantaneous frequency measurement." Operates in the 3, 6, 10 and 20 GHz frequency ranges. Capable of detecting a radiation source at any aspect, and of determining the type of source and the bearing to it (with a precision of around 15The receiver's computer memory can store data on the signal parameters of over 100 types of radar stations, and display information on 15 of them. Interchangeable with AN/ALR-46 and -48, AN/APR-25,-36 and -37 receivers. Installed aboard naval airplanes and helicopters.

AN/ALR-67/68: Advanced receiver controlled by a processor. Operates in the 1-16 GHz frequency range. Intended for installation aboard the F-14 Tomcat, EA-6B Prowler and F-18 Hornet.

AN/ALR-69: Modernized version of the AN/ALR-46 detecting receiver. Operates in the 0.5-18 GHz frequency range. Foresees adaptive signal search in separate sections of the frequency range. Computerized digital signal processing. Controls the AN/ALQ-119 aircraft ECM system. Installed aboard A-10, F-4 and F-16 aircraft.

AN/ALR-606: Improved version of the AN/ALR-66. Characteristics identical to those of the latter, but covers the entire range from 2 to 20 GHz.

AN/ALR-646: A supplement to the AN/ALR-66. Operates in the 2-20 GHz frequency range. Possesses an improved data processing and display system ensuring detection of weak signals within a wide frequency band, constant measurement of the carrier frequency and accurate determination of the bearing to the radiation source.

AN/APR-38: Automated ELINT station. Developed on the basis of the "Wild Weasel" program. Operates in the 0.6-18 GHz frequency range. Intended for search, detection, identification and determination of the location of enemy radar. Installed aboard the F-4G aircraft.

AN/APR-39: Intended to determine the carrier frequency, the pulse repetition frequency and duration and a number of other parameters of surface-to-air missile system guidance radar. Operates in the 2-9 GHz frequency range. Additionally capable of operating in the 1-2 GHz frequency range and partially in the 9-20 GHz range. Warning information on radar illumination is displayed on the screen of a cathode-ray tube and supplemented by an acoustic signal. Installed aboard CH-47,AH-1, OH-58 and UH-1H helicopters.

AN/APR-41: Experimental model. Intended for army helicopters and light airplanes.

AN/APR-44: Developed out of the AN/APR-42, with which it is interchangeable. 14.5-16.5 GHz reception band. Consists of an omnidirectional antenna with a 50field of view in relation to elevation, a receiver and a control console with a light indicator providing warnings of constant radar illumination. Receiver sensitivity 45 dB (relative to an intensity of 1 mW). Installed aboard AH-1 and EH-60 helicopters and OV-1, RV-1 and RU-21 aircraft.

AN/APS-109: Installed aboard bombers, being replaced by the AN/ALR-62 receiver.

Mk3: Small digital detecting receiver. Developed specially for installation aboard helicopters and light airplanes.

NTWS (New Threat Warning System): Radar illumination warning system of a new generation. Covers the radio frequency range from 2 to 40 GHz and the laser radiation wavelength range.

In the second stage of an aircraft's encounter with the enemy's radioelectronic air defense resources, the latter are suppressed by active and passive interference, or they are annihilated by antiradar missiles. Active interference is usually produced in the radio and infrared ranges. Such interference is divided in relation to its frequency spectrum into selective and nonselective defensive jamming, and in relation to the principle behind its effect upon radioelectronic resources into masking (noise) and imitative jamming. Selective jamming presupposes an accurate knowledge of the frequency of the resource to be suppressed, which reduces the requirements on the necessary emitted power. Nonselective jamming, which covers a wide frequency range, requires a knowledge of only the approximate frequency of the radioelectronic resource; however, the emitted power requirement rises significantly in this case. Noise jamming masks the useful signal, while imitative jamming creates false targets on the screen of the radar control console.

Electronic jamming stations are located either inside the fuselage of the aircraft or in a suspended pod. The latter is easily installed, and it can be quickly replaced if the ECM resources must be changed due to tactical considerations, but at the same time it creates additional drag and takes up space on weapon pylons. When electronic jamming stations are located inside the fuselage, these shortcomings can be avoided, but flexibility in replacing or modifying ECM resources is lost. A brief description of the principal American active radioelectronic suppression resources is given in Table 2.

American Radioelectronic Suppression Stations

AN/AAQ-4 and -8: Infrared jamming stations. Sapphire lamp serves as infrared radiation source. Eachstation uses four lamps generating high-power infrared radiation within a range of wavelengths corresponding to emissions fromaircraft engines. Installed aboard tacticalaircraft.

AN/ALQ-71 and -72: Jamming stations. Operate in the 1-8 GHz frequency range. Installed aboard A-7, F-105, F-4, F-101, B-52 and RB-66 aircraft.

AN/ALQ-76: Jamming station. Operates in the 2-8 GHzfrequency range. Contained in suspended podsmounted on EA-6A Intruder, EA-6B Prowler andA-4E Skyhawk aircraft.

AN/ALQ-81: Jamming station. Installed aboard A-7 aircraft in suspended pods.

AN/ALQ-86: Jamming station. Intended for the EA-6Aaircraft.

AN/ALQ-87: Jamming station. Operates in the 1-8 GHz frequency range. Installed in suspended podson F-111, FB-111 and F-4 aircraft.

AN/ALQ-91: Microwave communications link jamming station.Installed inside the fuselage of F-14 and A-4aircraft. Gradually being phased out.

AN/ALQ-92A: component of the AN/ALQ-99 station intended to jam enemy air defense fighter radio control resources. Can be installed separately only aboard the EA-6B aircraft.

AN/ALQ-94: Jamming station. Installed inside the fuselageof F-111 and FB-111 aircraft (gradually being replaced in the FB-111 by the AN/ALQ-137 station).

AN/ALQ-98: Noise jamming station. Installation in helicopters is planned. Presently in the development stage.

AN/ALQ-99: Station jamming enemy radar to provide group protection to aircraft. Two versions of thestation exist: One (in suspended pods) for installation on the EA-6B ECM aircraft, and the second (AN/ALQ-99E) for installation inside the fuselage of the EF-111A ECM aircraft. The AN/ALQ-99E contains 10 noise and imitative jamming transmitters. Interference power in continuous emissionmode exceeds 1 kW, and the frequency range is64 MHz to GHz. AN/ALQ-100Jamming station. Was installed in suspendedpods on A-4, A-6, EA-6B, A-7 and F-14 aircraft.2-8 GHz operating frequency range. Being replaced by the AN/ALQ-126 station.

AN/ALQ-101: The most widespread standard modular radioelectronic suppression station with a large number of various modifications (up to10). Operates in the 2-20 GHz frequency range.Suspended in pods from tactical aircraft.

AN/ALQ-102A: modification of the AN/ALQ-98 station.Intended for installation on helicopters in suspended pods.

AN/ALQ-105A: version of the AN/ALQ-101 station. Installed on both sides of the fuselage of the F-105 aircraft.

AN/ALQ-107: Infrared jamming station. Intended to protect helicopters from surface-to-air missiles. The apparatus is installed inside the fuselage of the UH-1 helicopter.

AN/ALQ-108: Aircraft identification system radar jamming station. Installed aboard F-4 Phantom, E-2C Hawkeye, P-3E Orion and S-3A Viking aircraft.

AN/ALQ-117: Jamming station. Operates in the 8-10 GHz frequency range. Installed inside the tailsection of B-52 bombers. May operate as an imitative jamming system.

AN/ALQ-119: Modular radioelectronic suppression station operating in the 2-20 GHz frequency range. Possesses a large number of modifications. Housed in suspended pods. Intended to disruptthe work of enemy surface-to-air missile and antiaircraft fire control radar by producing imitative jamming in the front and rear hemispheres. Provides for automatic control of power, frequency and type of modulation ofemitted interference signals. Installed aboard A-10, F-16 and F-4G aircraft.

AN/ALQ-122: Jamming station. Intended for use aboard B-52 aircraft. Can operate as an imitative jamming system.

AN/ALQ-123: Infrared jamming station. Cesium lamp serves as infrared radiation source. Time of generator's continuous operation is not less than 150 hr. Installed in a suspended pod on A-4, A-6, A-7 and F-4 aircraft.

AN/ALQ-126: Improved version of the AN/ALQ-101 station.Operates in the 2-18 GHz range, puts out a pulse power of up to 2 kW. The station can simultaneously produce signals and jam several enemy radar. Its resolution is 100 nanoseconds, the pulse delay is 0.12-4 microseconds, the width of the antenna system's beam pattern is 60 and its tilt relative to the horizon in the lower hemisphere is 15Installed inside the fuselage of A-6 and A-7 aircraft.

AN/ALQ-129: Advanced jamming station. An experimental model has been created.

AN/ALQ-130: Air defense communication line jamming station.Installed in A-4, A-6, EA-6B, A-7 and F-4 aircraft.

AN/ALQ-131: Self-contained pod-carried station for noise and repeater jamming of fighter-interceptors.Operates in the 2-20 GHz frequency range. Type of jamming, jamming signal modulation parameters and frequency variation patterns over time are selected automatically by a computer structurally connected to a reconnaissance receiver. Installed aboard F-4, F-16, F-111, EF-111, A-7 and A-10 aircraft.

AN/ALQ-132: Infrared jamming station. Hot ceramic element heated to aircraft engine temperature is the infrared radiation source. Installed aboard A-4, A-6, A-7, A-10 and OV-10 aircraft.

AN/ALQ-133: Station used for radiotechnical scouting of enemy ground radar. Operates in the 0.5-18 GHz-range. Contained in two pods. Installed in the RV-1D aircraft.

AN/ALQ-134: Jamming station. Intended for operation jointly with AN/ALE-37 and AN/ALE-39 dipole reflector and infrared trap ejectors.

AN/ALQ-135: Jamming station. Intended to suppress both pulsed radar and continuous-wave radar. Installed in the F-15 Eagle aircraft.

AN/ALQ-136: Repeater jamming station. Created on the basis of the AN/ALQ-129 station. Operates in the 8-20 GHz frequency range. It is to be installed in AH-1S and AH-64 fire support helicopters.

AN/ALQ-137: Imitative jamming station. Installed aboard F-111 aircraft.

AN/ALQ-140: Infrared jamming station. Developed on the basis of the AN/ALQ-132 station.

AN/ALQ-144: Infrared jamming station. Uses electric current-heated ceramic element as the infrared radiation source. Installed in suspended pods on UH-1, AH-1, UH-60 and AH-64 helicopters.

AN/ALQ-146: Infrared jamming station. Uses ceramic elements as infrared radiation sources.Intended for CH-46 helicopters.

AN/ALQ-147: Obsolete infrared jamming station. Uses a ceramic element heated by hot kerosene as the infrared radiation source. Installed in OV-1D and RU-10 aircraft.

AN/ALQ-151: Radio electronic suppression station. Operates in the 2-76 MHz range. Intended for installation in EH-1H ECM helicopters.

AN/ALQ-155: Computer-controlled radio jamming station containing eight interference transmitters.Intended for installation aboard B-52 strategic bombers.

AN/ALQ-161: Early warning radar, aircraft tracking radar,interceptor radar and surface-to-air and air-to-air guided missile control system jamming station. Contains a large volume of digital equipment and highly developed software.Intended for installation in the B-1 bomber.

AN/ALQ-162: Continuous-wave jamming station. Intended to suppress guided missiles with radar homing heads. A simplified version of the AN/ALQ-161 station. Under development for A-4, A-7, F-4,RF-4 and F-16 aircraft.

AN/ALQ-165: Advanced modular jamming station. Operates in (ASPJ) the 0.7-18 GHz frequency range. The possibility for simultaneous suppression of several enemy radar is said to be a unique feature of the station. Under development for F-18, F-14, F-16, A-6E and EA-6B aircraft.

AN/ALQ-171: Continuous-wave and pulsed radiation jamming station. Includes a detecting receiver, a digital control system and two types of interference transmitters. Adaptive control of interference power is said to be a unique feature of the station. Under development specifically for F-5 aircraft.

AN/ALQ-176: Advanced pod-carried jamming station. Creates continuous high-powered noise interference-.Contains up to five magnetron interference transmitters capable of electronic frequencytuning. Operates in the 1-15.5 GHz frequency range. The possibility for using a supplementary solid-state transmitter for work at frequencies below 1 GHz is foreseen. The station is to be installed in practically all types of fighters.

AN/ALT-13: Jamming station. Operates in the 2-8 GHz frequency range. Installed in B-52 aircraft,gradually being phased out.

AN/ALT-28: Jamming station. Operates in the 2-8 GHz frequency range (a possibility for expanding the range into higher frequencies is reported).Installed aboard B-52 D, G and H bombers.

Jampac: Compact and relatively simple jamming station.Operates in the 1-15.5 GHz frequency range.Output power of continuous noise interferenceis 150-400 W. Intended for installation aboard airplanes and helicopters.

Support Pac: Pod-carried jamming station. Operates in the 1-15.5 GHz frequency range when a magnetron is used as the interference generator. Interference in the frequency range below 1 GHz may be created by using a supplementary solid-state generator. Output power is 150-400 W (with a magnetron) and 150 W (with a solid-state generator).

American Antiradar Reflector and Infrared Trap Ejectors

AN/ALE-24: Installed aboard B-52 bombers.

AN/ALE-28: The device's pneumatic system has two ejection mechanisms operated by compressed air. Each mechanism is equipped with two independent cassettes. Developed for the F-111 aircraft.

AN/ALE-29: Contains up to 30 pyrotechnic cartridges filled with dipole reflectors or infrared traps. The discharge command may be transmitted manually by crewmembers or automatically by the radar illumination warning system. Presently being installed in naval tactical aircraft.

AN/ALE-32: Used in the EA-6 Prowler ECM aircraft. Suspended beneath the wing cantilevers in a pod.

AN/ALE-33: Developed for installation in unmanned aircraft.

AN/ALE-38 and -41: Intended for creation of clouds of anti radar reflectors. A wide-band assortment of seven types of dipoles is carried between two layers of polyethylene film. Dipoles weigh around 130 kg. Used by tactical and deck-landing aircraft.

AN/ALE-39: Improved version of the AN/ALE-29. Contains 60 pyrotechnic cartridges filled with dipole reflectors or infrared traps. Cartridges can be fired singly or in volleys, with different combinations pre-programmable depending on the tactical situation. Installed aboard A-4, A-6,A-7, F-14 and F-18 aircraft as individual protective devices.

AN/ALE-40: Loaded with 30 pyrotechnic cartridges filled with reflectors or 15 filled with infrared traps. The device's operation is controlled automatically by commands from an onboard computer. May be installed in F-4, F-5,F-14, F-104 and A-10 aircraft. An F-4 may carry up to four such devices to provide collective protection to a flight of aircraft.

AN/ALE-43: Pod-carried device. Cuts dipoles automatically prior to their discharge. Dipole length is selected on the basis of radiotechnical reconnaissance data or on the basis of a previously entered program, owing to which a frequency range from 250 MHz to 20 GHz is covered. Contains around 159 kg of material from which to cut dipoles, which is enough for continuous operation for approximately 3 minutes.

AN/ALE-44: Housed in a light pod with improved aerodynamic characteristics for use at supersonic speeds.

M-130: A version of the AN/ALE-40 device installed in helicopters. Modular design. Each payload-carrying module may contain 30 pyrotechnic cartridges. Paired modules containing 60 pyrotechnic cartridges may be used.

Passive radioelectronic suppression resources are based on the scattering of electromagnetic waves by various reflecting surfaces that create traces on the radar screen similar to those of real targets, or that mask useful signals. Antiradar reflectors such as metal-coated ribbon, dipole and corner reflectors, dummy targets and infrared traps are usually used as passive radioelectronic suppression resources. Passive interference in support of the combat activities of groups of aircraft is achieved by simultaneous ejection of massive quantities of reflecting elements. Clouds of antiradar reflectors may be created by special automatic devices installed inside the aircraft fuselage or carried in suspended pods. They are controlled from the pilot's cockpit. These devices can also be used to eject infrared traps. A brief description of the principal American dipole reflector and infrared trap ejectors is given in Table 3.

Active and passive radioelectronic suppression resources act upon radar stations for a limited time determined by how long the interference creating resources remain

within the station's zone of operation. Annihilation of radar stations is believed to be the most effective means of their suppression in a number of cases. Special weapons are used for this purpose—guided antiradar missiles that are guided to an operating radar station by a homing head. The principal American missiles of this sort are the AGM-45 Shrike, AGM-78 Standard-ARM and the AGM-88 HARM (for greater detail on these missiles, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 8, 1985, pp 52-56.—Editor).

11004

Combat Operations at Sea and the Problems of Early Warning

18010231i Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 47-53

[Article by Vice Adm I. Khurs]

[Text] Following World War II, development of the forms and methods of combat operations at sea was influenced by introduction of nuclear missiles into the naval forces on a massive scale, by creation of new missile carriers, electronic systems and control, communication, reconnaissance, ECM, navigation and other resources, and improvement of old ones.

That the military strategy of capitalist countries participating in military blocs is in principle a coalition strategy is a dominant factor in the viewpoints these countries have developed on the theory and practice of combat operations. This coalition strategy basically calls for employment of combined armed forces, as well as of the armed forces groupings of individual countries on the basis of national plans, and for extensive utilization of national territory and of ocean and sea theaters of military operations for military purposes.

The USA, which plays the role of the main rear supply base of NATO combined armed forces in Europe, and of American armed forces and their satellites in the Western Pacific, has lost the traditional invulnerability of its territory. This loss is having a direct effect on the manner in which the fleets are employed and on the way the forms and methods of combat operations at sea are developing.

New viewpoints are forming in the West in a direct relationship to prior experience, which is analyzed with regard for specific conditions and for changes presently occurring in weapons and military equipment. This prior experience occupies an important place in the theory and practice of modern combat operations.

In a future war, if imperialists manage to start one, the combat operations of naval fleets will encompass entire ocean and sea theaters of military operations, and they will extend throughout their depth. All branches of the naval forces will participate in them (with marine aviation and submarines playing the chief role); tactical and strategic aviation specially trained for operations at sea will participate in a significant way as well.

The combat activities of the fleets will attain their highest intensity in the first operations, which will be carried out in forward strategic zones spanning the bodies of water contiguous with the USSR and countries of the socialist fraternity. Such essentially "initiative and offensive" operations are in fact the basis of the USA's present "naval strategy," the principles of which are widely advertised by officials of the Navy Department. Former U.S. Naval Secretary Lehman noted that in a real crisis, American interests at sea would make it absolutely mandatory to compel the Soviet Union to deploy its forces in a defensive posture. It is believed that a strategy calling for naval operations at forward lines is an absolute prerequisite of unhindered transfer of troops and needed cargo via transoceanic lines of communication, and for protection of American territory and of the northern and southern flanks of NATO against attacks from the sea. The U.S. Navy is also preparing for operations of precisely the same sort jointly with allied navies in the Pacific.

This strategy foresees entering into conflict with the navies of the countries of the socialist fraternity right at their bases, and creating a so-called "forward strategic line of defense" with the objective of annihilating the socialist navies and creating a major hindrance to their deployment in the oceanic zone. Concurrently with this, foreign military specialists feel it advantageous to organize combat operations by diverse naval forces throughout the entire depth of the Norwegian Sea, and to link these operations to geographically advantageous lines: a line extending from northern Norway to the Spitsbergen Archipelago (in the north), and a line extending from Greenland to Iceland, Great Britain and southern Norway (this line serves as the southern perimeter of the forward strategic zone in the Northeast Atlantic).

As is noted in the foreign press, sizable forces are allocated for combat operations in the forward zone of the Atlantic: three or four carrier task forces, an operational missile group, an amphibious assault landing formation made up of NATO's attack fleet, and combined submarine, air and antisubmarine forces. At the beginning of combat operations (when in the words of Western military specialists a "crisis situation" develops), the NATO leadership foresees conducting a blockade operation on a major scale. It will basically involve combat operations aimed at annihilating the enemy's naval forces at their bases and at sea, seizing part of his territory, protecting friendly nuclear missile submarines at combat positions, supporting troops on NATO's northern flank and supporting marine transport in the

region. The combat activities are to be carried out in close coordination with tactical and strategic aviation, and under the cover of continental air defense systems, with active reconnaissance and wide use of ECM resources. The main efforts of the navy in the oceanic zone of the Atlantic will be focused on protecting strategic submarines and supporting shipping. Judging from reports in the foreign press, the fleets and their covering and supporting forces are expected to carry out similar operations in the Pacific, where armed forces groupings of the USA, Japan and South Korea will conduct major blockade and assault landing operations and protect oceanic lines of communication in the West Pacific.

As for the inland marine theaters of military operations (the Baltic and the Black Sea), the NATO leadership is advertising plans to establish total control over them by annihilating the enemy's main naval forces. Tactical and naval aviation and missile boats are believed to be the principal means of attaining these objectives.Mines and ECM resources are to be used actively and intensively during combat activities in all theaters of military operations.

What changes have new weapons and equipment made in the content of combat activities at sea, and how have the role and significance of individual branches of the naval forces changed?

Evaluation of the Role and Significance of Men, Equipment and Armament.

Western military specialists evaluate the role and significance of men, equipment and armament in modern combat activities on the basis of their efficacy in three groups of offensive missions: Actions against a shore, interdiction of marine shipping and operations against naval forces.

The viewpoints of foreign naval specialists on combat use of surface ships and multipurpose submarines have undergone the most serious changes in application to these missions.For a long time following World War II, surface ships were thought to play an insignificant role in offensive operations. This opinion was formed under the impression created by the demise of several thousand ships during the war owing to the dramatically improved capabilities of aviation and submarines. Limited use of large ships during the war was another substantial basis for the conclusion that the combat capabilities of surface ships were insignificant. For example American battleships were used in the Pacific virtually as mobile platforms for artillery and antiaircraft batteries.

But a process of reevaluating the role and significance of surface ships in the fleet's offensive missions began in the 1970s. This process was hastened by creation of new types of weapons and equipment, among which antisubmarine missiles should be mentioned first: the Harpoon and Tomahawk in the USA, the Exocet in France, the Sea Killer in Italy, the Gabriel in Israel and so on. Antisubmarine missiles, which are characterized by high precision and dependability, significantly raised the offensive capabilities of surface ships. The advent, on the latter, of helicopters, of modern sonar systems including ones using long towed antennas, of antisubmarine and antiaircraft missile systems, artillery systems and various types of radioelectronic systems made them the most universal of all naval branches. Assertions that the era of surface ships had ended owing to their great vulnerability to airborne and submarine weapons faded into the background. Evidence indicating that the role of surface ships has increased can be found in the USA's rather expensive program for restoring four battleships on a new technical basis, and in the fact that many capitalist countries have begun building cruisers, destroyers and frigates.

The theory of the combat use of surface ships independently and within the composition of diverse formations in practically all kinds of combat operations at sea has now been developed, and it is undergoing practical testing. But all of this does not mean that no problems arise in the use of modern surface ships in naval operations. As with anything new, introduction of antisubmarine missiles into the armed forces necessitated solution of problems concerned with massed use of the missiles, the optimum quantity of missiles in a volley, electronic compatibility and use of antisubmarine missiles at a range extending beyond the horizon. On the other hand the important problem of ship antimissile defense arose as well. But all of these difficulties cannot diminish the significance of surface ships as naval offensive resources, inasmuch as these difficulties are also encountered to one degree or another in all branches of the navy.

The role of multipurpose submarines, and chiefly nuclear submarines, increased significantly in recent times. Foreign specialists worked extremely long and hard to achieve the high combat characteristics of submarines, which were the consequence of introducing nuclear power to them—something which itself predetermined the new combat capabilities. In the estimation of Western specialists introduction of antiship missiles into submarines made them a special branch of naval forces. All of this, as well as presence of the highly important combat quality of covertness, which no other branch of the navy possesses to this degree, made submarines a universal fighting force at sea, capable of operating independently or jointly with other forces in missions against ships and coastal facilities.

Foreign military specialists feel that the modern multipurpose submarine must be one of the most important elements of a task force, a ship group or a convoy. At the same time, foreign scientists and technicians are presently working on a number of problems with the objective of realizing the combat capabilities of this branch to the fullest. Thus they are working on the problems of underwater identification of various objects, navigation and target indication, the conduct of combat activities in arctic regions and others. For example in order to solve

the problems concerned with combat activities of submarines in the Arctic, the USA and some other countries had to carry out multifaceted technical and research projects such as sonar research, creation of equipment for navigation beneath ice, and reinforcement of submarine hulls for navigation through ice. In the last 2 years the Americans have progressed from lone to group cruises in the Arctic, and to practicing joint activities of submarines of the Atlantic and Pacific fleets beneath ice.

Multipurpose aircraft carriers occupy a strong first position in relation to other branches of the navy. Debates on the role and significance of aircraft carriers in combat activities ended in the 1970s in favor of further development. Aircraft carriers are presently being built by the USA, France and Spain. The long-range programs of some countries foresee construction of aircraft carriers of relatively small displacement—carriers accommodating attack, antisubmarine and other types of airplanes and helicopters.

Carrier task forces and operational formations, which contain two or three task forces, are the basis of the combat organization of carrier forces.Aircraft carriers are given a primary role in the aggressive military plans of the USA and its allies—a role which has been confirmed on several occasions in postwar conflicts and local wars. Operations at sea cannot even be imagined without the participation of aircraft carriers. It is believed that no organizational fighting unit other than the carrier task force is capable of defending itself and executing missions so reliably. Organizationally the carrier task force is a tactical formation of diverse forces possessing high attack capabilities and developed control, communication, reconnaissance and ECM systems. Carrier task forces are the principal implement of the foreign policy of capitalist countries. They are always sent to regions of the world in which crises develop. The fact itself of sending aircraft carriers to a particular region of the world is a unique sort of barometer of the government's reaction and attitude toward an event that occurred or is occurring there. All of this is done without a doubt for the supposed need to protect vitally important interests. Especially zealous on this account is the USA, which now has aircraft carriers on permanent patrol in the West Pacific, in the Indian Ocean, in the Mediterranean Sea and in the Caribbean basin.

Throughout all of the postwar years the aspirations of foreign naval specialists were oriented on enhancing the combat capabilities of carrier task forces—more accurately their striking power and their combat stability. They believe that the present and future belong to carrier task forces, since they can ensure the success of a mission, which is why keeping the aircraft carrier operating is the main objective in the tactical use of the task force.

To achieve this invulnerability, carrier aviation is presently being updated by the introduction of airplanes with combat qualities superior to those of existing aircraft (F-14A Tomcat fighters, F/A-18 Hornet attack fighters); moreover the latest multipurpose nuclear powered submarines of the "Los Angeles" class carrying antisubmarine missiles in addition to torpedoes, guided missile cruisers of the "Ticonderoga" class and "Spruance" class destroyers, armed with tactical and operational-tactical antiship missiles and possessing heightened capabilities for antiaircraft, antimissile and antisubmarine missions, are being introduced into the composition of carrier strike forces. Special emphasis is laid in the foreign press on the fact that in accordance with its technical policy the USA has switched to building nuclear powered aircraft carriers only. Already five out of the 15 ships among the navy's effectives are nuclear powered. Two more "Chester W. Nimitz" aircraft carriers are presently under construction (scheduled for commissioning in the early 1990s). These measures have seriously increased the attack and defensive capabilities of the carrier task force (see table)

Change in Combat Capabilities of the Carrier Task Force

Armament and combat capabilities	Carrier Task Force: Old	Carrier Task Force: New	Ratio
Number of airplanes			
For attack mission	40	40	1:1
Including antiship missiles	(-)	(12)	(-)
For air defense	24	36	1:1.5
Number of antiship missiles			
Harpoon	—	120-140	—
Tomahawk	—	up to 16	—
Depth of massed action composition, km			
By aviation	650	850	1:1.3
By ship artillery and missiles	25	130(Harpoon)	1:5
		550(Tomahawk)	1:22
Number of surface-to-air missile systems	7(14)	17(76)	1:2.4
			(1:1.5)
Number of antiaircraft artillery mounts (barrels)	21(30)	38(132)	1:1.8
			(1:4.4)
Number of airborn targets	20	30	1:1.5

It follows from the table that the new carrier task force has enjoyed considerable growth in combat capabilities owing to introduction of dual-purpose (attack and fighter) F/A-18 Hornets and new surface ships carrying missile and artillery armament.But at the same time aircraft carriers are not believed to be invulnerable. It is no accident that as a rule, in the course of combat operations they remain beyond the range of enemy tactical aviation, deploying in the combat area only after the latter is weakened.

In order to ensure combat stability, in recent exercises the Americans have begun working with formations consisting of several carrier task forces. Prolonged survival of aircraft carriers in the course of operations is a difficult matter, and it is a topic of further research.

Conduct of Combat Operations at Sea and Utilization of the Different Naval Branches

Planning major operations in or near areas in which forces would be used in a combat situation occupies a large place in the operational preparations of the naval forces of NATO countries. The largest exercises, in which all naval branches participate, are carried out in regions contiguous with the Soviet Union's borders, or where its state interests are mostly at stake. In addition the navies of the capitalist countries acquired considerable experience in postwar conflicts and local wars, among which the Anglo-Argentine conflict of 1982 over the Falkland (Malvinas) Islands is of special interest to naval specialists.

In correspondence with viewpoints existing in the West, the content of operations at sea in forward zones basically boils down to the following. The combined naval forces of the USA and states allied with it, reinforced by tactical and strategic aviation as well as by ground troop formations in which the U.S. armed forces play the leading role, are the foundation of the forward groupings. Forces of the allied navies that are not contained in the combined groupings are to be used on the basis of national plans, chiefly to support operations in designated regions, to defend coasts and to protect coastal communications. The overall operational grouping is divided into numbered operational formations, groups and elements in correspondence with their purpose in combat. Each formation is allocated a particular region of operations. A unified control and communication system providing for centralized and separate control of the forces is being created. The organization of the forces is subordinated to the main goal of the operation—to prevent deployment of the enemy's forces in the ocean, to destroy his main forces "on lines advanced forward," and to bottle them up until friendly forces are able to gain control over a line extending (in the case of the Atlantic Ocean) from Greenland to Iceland to Great Britain. In the opinion of the adherents of the "marine strategy" attainment of this goal of the operation would make it possible to foil the enemy's attempts to "blockade vitally important marine lines of communication, upon which the alliance depends from the standpoint of trade and delivery of critically important military reinforcements.

"Nuclear powered submarines, coastal and marine aviation and surface ships armed with missiles, torpedoes and mines are to be included predominantly in the operational formations for actions on the lines." In January 1986 Admiral Watkins, who was naval chief of staff at that time, declared that part of the antisubmarine forces would be allocated for the annihilation of submarines carrying ballistic missiles.According to the plans of NATO strategists, at the beginning of combat operations the principal mission of carrier formations (in the Atlantic—within the composition of the NATO attack fleet, and in the Mediterranean Sea—within the composition of NATO naval attack forces of the South European theater of military operations) would be to annihilate enemy naval forces at sea and protect other operational formations during the operation. As forces posing a direct threat to carriers are suppressed, the offensive role of the carrier formations in the operation would grow. The operation is to conclude with the capture of operationally important enemy territory, after which combat activities will continue on geographically advantageous lines to prevent penetration of forces into the oceanic zone. The marine operation would consist of the operations and combat activities of operational formations and task forces, carried out on the basis of a unified plan. Combat activities aimed at attaining superiority at sea through the annihilation of enemy forces and conduct of assault landing operations have an especially important role among them.

According to viewpoints existing in the West and the experience of local conflicts, as a rule these forms of combat activities are mutually related. The relationship between them is evident from the aspect that marine assault landing operations presuppose mandatory attainment of superiority at sea as a prerequisite of the success of such operations. It is noted that as in the postwar era, the objective of attaining superiority at sea in World War II was to create favorable conditions for successful completion of operations. At the same time these combat activities are so decisive and complex in their content and in relation to the dynamic nature of the "battlefield" that they are interpreted as an independent form of activities.

Annihilation of the enemy's naval forces is believed to be "the fastest and most effective means of establishing control over vitally important regions of the sea." The viewpoints of military specialists on the forms of combat activities changed significantly in comparison with the past. In their opinion sea battles and engagements of the future will be characterized by new traits. In distinction from the past, submarine forces will occupy a noticeable place in the operational organization of the forces. The sea battle will consist of the combat activities of separate groups (elements) of the combat formation, since the groupings created for combat missions will necessarily have a dispersed combat formation. The effort to mislead the enemy, to fire the first volley and to make the first strike will have even greater significance in sea battles. Marine engagements and battles will encompass wider areas than before.

The statements made above are supported by the following example. During a combined NATO naval exercise code-named "Ocean Safari-83" an American carrier task force practiced an air attack on an "enemy" operational formation in the Atlantic (Figure 1). The attack, which was simulated by four A-6E Intruder aircraft, was made against an operational formation around 1,800 km from the task force. An S-3A Viking aircraft did the last-minute reconnaissance and target indication. The "enemy" was attacked by Harpoon antiship missiles from a range of 60-110 km. All aircraft were refueled in the air

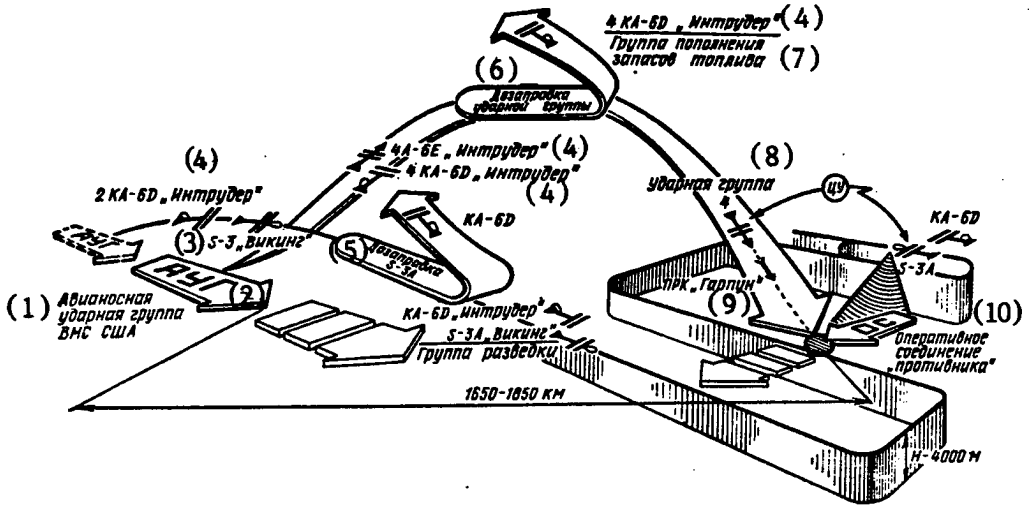


Figure 1. Surprise Air Attack on an Enemy Operational Formation by a Carrier Task Force (A Variant)

Key:
1. U.S. Navy carrier
2. Carrier task force
3. Viking
4. Intruder
5. Refueling formation
6. Refueling of attack group task force
7. Refueling group
8. Attack group
9. Harpoon antiship missile
10. "Enemy" operational

by KA-6D Intruder aircraft, which were allocated specifically to the attack and reconnaissance groups.In this example the attacking side proceeded with the plan of catching the reliably reconnoitered opposing grouping unawares, at the limit of the capabilities of deck-landing attack aircraft. To implement its plan the carrier task force made do with a reduced aerial combat formation consisting of only attack and reconnaissance groups.

In other cases (Figure 2), when the carrier task force has the mission of defeating the enemy in expectation of strong countermeasures on his part, the aerial combat formations are deployed in their entirety, such thatseveral air attacks are carried out. Such air groups may include several attack groups operating from different tactical directions, fighter cover, reconnaissance, ECM and refueling groups and an airborne command post. Surface ships and submarines within the composition of the dispersed combat formations of the carrier task force will make missile strikes from designated positions in coordination with the actions of aviation. In the opinion of foreign military specialists, massed use of missiles will increase as the opposing groupings come closer and as surface ships are committed to combat.(To be concluded)

11004

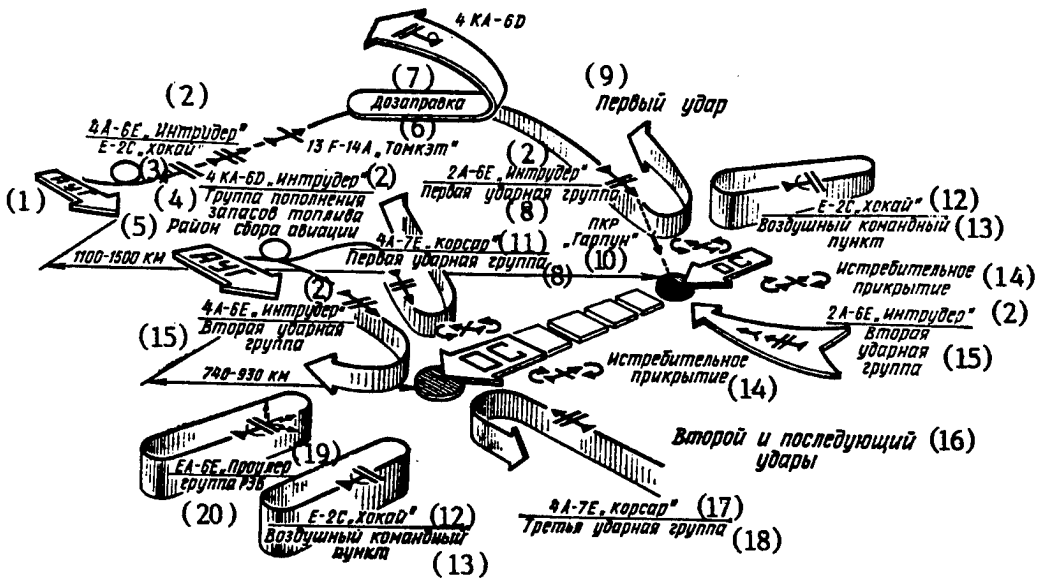


Figure 2.Air Attacks on the Enemy by a Carrier Task Force in Expectation of Strong Countermeasures (A Variant)
Key:
1. Carrier task force
2. Intruder
3. Hawkeye
4. Refueling group
5. Aircraft assembly area
6. Tomcat
7. Refueling
8. First attack group
9. First attack
10. Harpoon
11. Corsair
12. Hawkeye
13. Airborne command post
14. Fighter cover
15. Second attack group
16. Second and subsequent attacks
17. Corsair
18. Third attack group
19. Prowler
20. ECM group

Air-Delivered Sonobuoys

18010231j Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 53-57

[Article by Capt 2d Rank A. Bryukhov and Capt 3d Rank A. Borodavkin]

[Text] The naval commands of the USA and a number of other capitalist countries are continually improving antisubmarine weapons, including air-delivered sonobuoy systems intended to detect and track submarines. These systems are based on passive and active sonobuoys carried by ASW airplanes and helicopters.

Passive sonobuoys receive noise emissions from the target usually within the frequency range from 10 Hz to 2.4 kHz, and after transforming these emissions they transmit them via ultrashort-wave communication lines to a radio receiver carried by the aircraft. They are used as a rule to determine the bearing to the target.

Active sonobuoys emit hydroacoustic pulses and receive echoes from the target, which makes it possible to determine the range to the target from the data of a single buoy.

Passive and active sonobuoys may be nondirectional and directional. A nondirectional passive buoy is equipped with an omnidirectional hydrophone, and therefore all it can do is detect a target. The advantage of passive buoys is that it is impossible for the enemy submarine to establish the fact that such buoys are in use, or the moment it is detected by the antisubmarine forces.

Directional sonobuoys have directional hydrophones, the output signal of which is compared with a reference signal from a built-in magnetic compass, thus making it possible to determine the bearing to the target relative to the buoy. The data of two or three directional passive sonobuoys would have to be triangulated or data from one directional active sonobuoy would have to be available in order to determine the target's location.

In an active sonobuoy, the work of the hydroacoustic transmitter is controlled by a built-in timer or by radio commands transmitted from thef delivering aircraft: The duration and repetition frequency of the hydroacoustic pulses and the moment at which they begin to be emitted may be varied. All types of buoys are powered by dry cells activated by seawater after splashing down.

Modern sonobuoys are complex devices allowing for flexibility in the search for submarines in different tactical situations owing to the following factors: the possibility for efficient change of the depth of the hydrophones; simultaneous reception of data from several sonobuoys, making it possible to raise the accuracy of determining target location; use of new technology to reduce the dimensions of the sonobuoys and increase their number aboard the delivery platform while keeping delivery space requirements the same.

Targets are usually sought in the following manner. First, to detect a submarine, a series of nondirectional passive buoys are dropped in such a way that they cover the entire search area.

After a submarine is detected, directional passive sonobuoys are dropped to determine its location. In the final phase of the search, active sonobuoys are dropped or previously dropped buoys are turned on in order to pinpoint the location of the submarine to permit the use of weapons against it.

The range from which passive sonobuoys can detect a submarine depends on the noise level generated by the submarine, the depths of the thermocline, the hydrophones and the target, the sea's hydrology, the geographical location of the search area (coastal waters, shallow water etc.), and the elements of the target's motion (its course and speed). This is why a search operation in a vast search region would require a small number of sonobuoys under favorable conditions, while on the other hand a confined search region would require a significant number.

Before the search for a submarine is started a bathythermographic sonobuoy is dropped. It transmits data on change in water temperature with depth back to the delivery platform via a preset radio channel, and the optimum depth for the hydrophones is determined from these data.

Before the sonobuoys are dropped, the sonar operator can manually select a fixed depth for each hydrophone and the necessary time of its operation—for example 1, 4 or 8 hours.

According to the foreign press buoys may be dropped from altitudes of 45-3,000 m from an airplane flying at 110-650 km/hr. To exclude error caused by wind drift when buoys are dropped from high altitude and to consequently increase the search precision, an onboard computer calculates the place where each sonobuoy splashes down. The rate at which a buoy falls is reduced by deployment of a rotoshut [transliteration] or parachute, which separates from the housing after it splashes down. Simultaneously a watertight float fills with gas, deploys an ultrashort-wave antenna contained within it in vertical position and keeps the sonobuoy's transceiver afloat. The hydrophone,f which is connected by a cable to the sonar signal receiver, descends to its prescribed depth and begins receiving signals from the environment (Figure 1). All received signals are transmitted via an ultrashort-wave channel to the delivery platform for processing. Transmission of the information usually begins 1-2 minutes after the sonobuoy splashes down—the time it takes for seawater to activate the power source. If the temperature or the salinity of the water is low the activation time may increase to 3 minutes. After a certain amount of time a valve on the housing dissolves, a hole opens to admit seawater, and the buoy sinks. The range from which sonar data can be received by the delivery platform from a sonobuoy via a radio channel is limited by direct radio visibility between the sonobuoy and delivery platform.

Signals from a sonobuoy dropped by one delivery platform may be received by another, making it possible to continuously process and display information on the underwater situation whenever contact is transferred and the airplanes (helicopters) are relieved. Moreover inasmuch as sonar signals are transmitted via an ultrashort-wave channel and can be received by any delivery platform, the analyzing resources of different vehicles may be combined to permit their integrated processing. Apparatus installed aboard ASW helicopters can usually process data from four buoys simultaneously, while apparatus carried by airplanes can process data from 8-16 buoys. Given the presence of the appropriate onboard apparatus, by switching to an expanded frequency range and increasing the number of sonobuoy

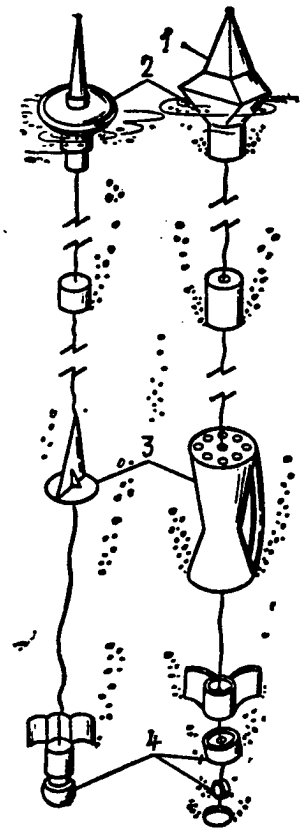


Figure 1.Main Components of AN/SSQ-53 Passive Sonobuoys Produced by America's Magnavox (Left) and Sparton: 1—antenna; 2—float; 3—damper; 4—hydrophone.

radio channels to 99, a sonar operator can observe several fields from a large number of buoys on a time-sharing basis, by switching the radio channel from one field to another.

Because the target location is determined by triangulation when passive buoys are used, the location of each buoy that is dropped must be known precisely. The delivery platforms are outfitted with ultrashort-wave direction finding systems for this purpose.

Since sonobuoys are a search resource that is used only once, the demand for them is great, and according to the foreign press several million buoys of different types have been manufactured. The table below gives the characteristics of sonobuoys used most often in the naval forces of the USA, Canada, Great Britain, France and Australia. Companies in these countries produce sonobuoys on the basis of their own plans and licenses (1). The AN/SSQ-41 Jezebel system, a mass-produced passive nondirectional sonobuoy, has been used most widely for submarine detection since the early 1960s. A modernized version, the AN/SSQ-41B, has been produced since 1976. Its hydrophone receives acoustic signals in the frequency band from 10 Hz to 10 kHz. It is deployed at a depth of 20 or 305 m, and its operating time is 1, 3 or 8 hr. Information on the underwater situation is transmitted via one of 31 ultrashort-wave channels by a 1 W transmitter. The AN/SSQ-41B is presently being replaced in the USA by an improved model—the AN/SSQ-53A, but the former is to remain in use for another few years.

The AN/SSQ-53 DIFAR system, a passive directional sonobuoy, is intended to determine the location of an underwater target, and it is highly sensitive in the low frequency range. Its most recent modification—the AN/SSQ-53B—was recently placed into production. The sonobuoy uses a three-element acoustic antenna (two directional and one nondirectional) deployed at a depth of 27 or 305 m. It descends to maximum depth in 3 minutes. The operating frequency band within which noise is received is 10 Hz to 2.4 kHz. The AN/SSQ-53B operates for 1 or 4 hours, transmitting information via one of 99 ultrashort-wave channels. A frequency spectrum synthesizer is now used in sonobuoys in place of a quartz frequency oscillator. The transmitter's power is 1 W. Manual (mechanical) presetting of the radio channel frequency, the depth of deployment of the hydrophones and the time of operation of the buoy has been replaced by electronic switching.

The AN/SSQ-77 VLA DIFAR system, a passive directional sonobuoy, was developed specifically to detect submarines at long range and at great depth, and to search for submarines on a high-intensity noise background making it difficult to isolate useful signals from a submarine. The sonobuoy possesses an acoustic antenna taking the form of a vertical linear array consisting of nine nondirectional hydrophones and two directional hydrophones positioned in the center of this phased antenna system. The latter determine the direction to the target. The operating frequency range is from 10 Hz to 2.4 kHz.

The AN/SSQ-77A is the first buoy in the U.S. Navy that permits change of the radio channel's nominal frequency aboard the delivery platform before the buoy is dropped. In previous models this frequency was set at the manufacturing plant. The AN/SSQ-79 SVLA DIFAR system, a directional sonobuoy, was a further development of passive sonobuoys.

According to the classification adopted by the USA and NATO countries sonobuoys possess type A and F housings (correspondingly 914 and 300 mm long, with a diameter of 123.8 mm).

The principal types of sonobuoys—passive nondirectional and directional (DIFAR and VLA DIFAR) were modernized and switched from type A to type F housings while keeping the technical characteristics at their previous level.

ОСНОВНЫЕ ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ РГБ

(1) Название РГБ, страна-разработчица	(2) Диапазон радиоканала, МГц / мощность, Вт	(3) Тип корпуса (по классификации НАТО)	(4) Страна, где РГБ состоят на вооружении
AN/SSQ-41B, США (5)	162 — 174 / 1	A	США, Канада, Франция, Италия, Норвегия, Япония, Нидерланды, Новая Зеландия (9)
AN/SSQ-53B, США	136 — 174 / 1	F	США, Великобритания, Франция, Нидерланды, Япония (10)
AN/SSQ-77, США	136 — 174 / 1	F	США (5)
AN/SSQ-47B, США	162 — 174 / 0,25	A	США, Канада, Великобритания, Япония (11)
AN/SSQ-50B, США	162 — 174 / 0,25	A	США, Великобритания, Франция, Япония (12)
AN/SSQ-62B, США	136 — 174 / 0,25	A	США, Великобритания, Франция (13)
(6) SSQ-904, Великобритания	136 — 174 / •	F	Великобритания
SSQ-963, Великобритания	136 — 174 / •	A	То же (14)
DSTV-4M, Франция (7)	136 — 174 / 0,5	A	Франция
DSTV-7Y, Франция	136 — 174 / •	F	То же
SSQ-801, Австралия (8)	136 — 174 / 1	A	Австралия, Великобритания

Basic Technical Characteristics of Sonobuoys

Key: 1. Sonobuoy, developing country 2. Radio channel range, MHz/power, 3. Type housing (NATO classification) 4. Countries possessing the sonobuoys 5. USA 6. Great Britain 7. France 8. Australia 9. USA, Canada, France, Italy, Norway, Japan Netherlands, New Zealand 10. USA, Great Britain, France, Netherlands, Japan 11. USA, Canada, Great Britain, Japan 12. USA, Great Britain, France, Japan 13. USA, Great Britain, France 14. As above

Besides passive sonobuoys, the U.S. Navy possesses three types of active sonobuoys. The simplest are the nondirectional AN/SSQ-47A and B, which can only determine range to the target. When AN/SSQ-47Bs are used, up to six sonobuoys can operate simultaneously in the sonar channel without mutual interference. Information is transmitted to the delivery platform by a 0.26 W transmitter via one of 12 preselected ultrashort*wave channels. Sonar pulses begin to be transmitted immediately after splashdown and for a period of not more than 30 minutes—for the life of the power source.

The AN/SSQ-50 CASS system, an active sonobuoy that is controlled remotely from the delivery platform, operates for a longer period of time. Covertness of submarine search is also greater because the time of active emission is reduced. The hydrophone of the AN/SSQ-50B sonobuoy is deployed at a depth of 18 or 457 m. The buoy's operating time is 0.5-1 hr. Transmission of sonar pulses is initiated by a command from the delivery platform. One of 31 channels and a 0.25 W transmitter are used to transmit the data.

The AN/SSQ-62 DICASS system, an active directional sonobuoy, was designed as a replacement for the AN/SSQ-47 and -50. It differs from the AN-SSQ-50 in that it can determine the bearing to the target in addition to the range, and it possesses lithium power cells instead of silver chloride.

Remote control of the CASS and DICASS sonobuoys makes it possible to select the depth of hydrophone deployment and the moment at which sonar emission is initiated, to change the emission conditions, to select the appropriate radio channel and to sink the sonobuoy for self-destruct purposes. The AN/SSQ-62A and -62B are modifications of the AN/SSQ-62. They can operate in both active and passive mode. The AN/SSQ-75 active sonobuoy, which possesses improved acoustic characteristics, is intended to detect submarines at depths greater than 450 m, within the zone in which an underwater acoustic channel forms.

The temperature gradient of the aqueous environment is measured by the AN/SSQ-36 bathythermographic sonobuoy. Its temperature sensor drops to a depth of 305 m at a rate of 1.5 m/sec (plus or minus 5 percent). The rate at which the sensor descends must be strictly determined, inasmuch as the water temperature is measured at specific time intervals. Initiation of emission in the sonobuoy's radio channel is delayed for the time it takes for the temperature sensor to separate from the buoy housing. Water temperature measurements within the range from -2 to +35are transmitted to the delivery platform for analysis of the conditions under which acoustic signals would propagate in the aqueous environment. The maximum time of the sonobuoy's operation is 12 minutes, after which it sinks of its own accord.

The AN/SSQ-57 passive nondirectional sonobuoy has the capacity for classifying submarines with the purpose of determining the optimum number of buoys necessary for the search. It can also be used to detect submarines. In this connection the frequency range is widened to 10-20,000 Hz. A calibrator is built into the buoy to permit determination of the intensity of sonar noise within a wide range.

In response to orders from the Canadian navy the Sparton Corporation developed a series of sonobuoys including the SSQ-517/8 nondirectional passive buoy with an operating frequency band from 10 Hz to 10 kHz, and the CAN CASS SSQ-522 and -523 systems, similar in their characteristics to the American AN/SSQ-47 and -50 CASS systems respectively. The same company is working on a DICASS active directional sonobuoy, which will be supplied to CP-140 Aurora basic patrol airplanes.

Great Britain

The principal suppliers of sonobuoys are the Plessi and Dovti [transliterations] companies.

The latter produces various types (around 100,000 units) for the navy and for export (Figure 2 [not reproduced]). Among them are the Jezebel and SSQ-904 Mini-Jezebel nondirectional passive sonobuoys, and the Ranger nondirectional and CAMBS directional active sonobuoys.

The Jezebel buoy operates in the frequency range from 5 Hz to 5 kHz for 1, 4 or 8 hours with the hydrophones deployed at depths of 18, 90 or 137 m. Acoustic data may be transmitted by one of 99 ultrashort-wave channels. An 11-element vertically linear shortened array is being developed for passive directional sonobuoys of the future.

The SSQ-947B Ranger system is similar to the American AN/SSQ-47 sonobuoy. It emits sonar pulses in the 13-19 kHz range at a power of 200 W. Besides those listed above, the Dovti company produces the SSQ-963 CAMBS radio-controlled sonobuoy and the SSQ-937 mini*bathythermographic buoy, which are similar in characteristics to the American AN/SSQ-62 and -36 respectively.

Plessi is producing the AN/SSQ-53A sonobuoy and Sippikan [transliteration] is producing the AN/SSQ-36 on the basis of American licenses.

France

The DSTV-4L, 4M and 7Y sonobuoys are the most sophisticated. The DSTV-4M passive nondirectional sonobuoy operates in the frequency range from 10 Hz to 2.4 kHz for 1, 3 and 8 hours. The hydrophones are deployed at depths of 20, 100 and 300 m. Acoustic data are transmitted by one of 99 ultrashort-wave channels that may be selected aboard the delivery platform. The DSTV-7Y is a mini-sonobuoy with the same characteristics.

Australia

Amalgamated Uvaeles [transliteration] has developed the SSQ-801 (Figure 3 [not reproduced]), a passive directional sonobuoy intended to detect submarines on a noise background in coastal regions and in zones of intensive shipping. An antenna array consisting of 25 hydrophones and special equipment that forms the lobes of the receiving beam pattern is used to detect and determine the direction to underwater targets.

The hydrophone array receives signals in the frequency band from 10 Hz to 10 kHz, and it can be deployed at a depth of 25 or 135 m. The operating time of the sonobuoy is 0.5-9 hr. Data are transmitted by the radio channel in digital form, making it possible to encode the signals. Transmitter power is 1 W.

In the opinion of foreign specialists further development of the electronics of sonobuoys will make it possible to create program- or radio-controlled buoys.

Western specialists believe that the characteristics of sonobuoys can be improved by raising the stability of the hydrophones in water. This should reduce the intensity of noise created by water flowing around the hydrophones. This problem is to be solved in part by designing improved underwater floating anchors.

It is reported in the foreign press that the number of sonobuoys that could be carried by a delivery platform was tripled by installing sonobuoys in type F housings. However, the need for successively loading such buoys into the launcher tube somewhat diminishes the efficiency of their deployment. To correct this shortcoming the USA's Space Development developed sonobuoys with a smaller diameter (54 mm as opposed to 123.8 mm) with a housing of the same length as a type A sonobuoy.

A special aircraft is being designed for ships not equipped with deck-landing helicopters. This aircraft or rocket will be launched from the ship, and it will deploy a series of sonobuoys. In this case one of the buoys (the controlling buoy) will gather information on the underwater situation from the others and transmit it to the ship, simultaneously reporting the location of each sonobuoy.

The foreign press information presented above on the constant improvements being made in sonobuoys in the navies of capitalist states is clear evidence of their active preparations for antisubmarine warfare.

Footnote 1. For the basic combat characteristics of airplane-delivered sonobuoys, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 3, 1986, p 57.—Editor

11004

French Syracuse Satellite Communication System

18010231k Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 58-59

[Article by Capt 3d Rank A. Stefanovich]

[Text] In its efforts to create a flexible and highly effective control system capable of collecting, processing and distributing needed information, and of preparing and transmitting combat control commands and signals to subordinated forces, in the early 1980s the command of the French armed forces began deploying the Syracuse satellite communication system.It is reported in the foreign press that the system uses separate retransmitters of two Telecom-1 communication satellites in geostationary orbit. The communication apparatus of each of them has three separate radio channels: Two operate in the 4-6 and 12-14 GHz frequency ranges and are intended for use as civilian communication channels, while the third (7-8 GHz) is used in support of the command of the armed forces, including the navy. The areas on the earth covered by the Telecom-1 satellites include the principal areas of activity of the fleet's ships (Atlantic Ocean, Mediterranean and Red seas, Indian Ocean).

There are two control stations in the Syracuse system for control of the satellites and for trajectory and telemetric monitoring of their flight and of the state of onboard equipment. One of these stations is in Plemer-Bodu [transliteration] while the other is in the vicinity of Toulouse.

The parties of the Syracuse satellite communication system include permanent, ground, ship and mobile stations. In accordance with the established requirements information is transmitted from the satellite to the ground in the 7,255-7,295 MHz range, while information is transmitted from the ground to the satellite in the 7,980-8,020 MHz range. Information is transmitted in vocoder telephony (2,400 bits/sec), letter-printing (75 bits/sec) and data transmission modes. All information is first encoded. Special devices providing ford multistation access to the retransmitting satellite on the basis of coded channel separation are used in the terminal stations.

Permanent coastal satellite communication stations are located in the vicinities of Paris, Brest and Toulon. They represent the basis of the Syracuse communication system, and they maintain communication with mobile and ship stations as well as between each other. Ship satellite communication stations are installed on ships of the principal classes (a total of 20 ships are to be outfitted). A station consists of two antennas on the right and left sides of the superstructure, and transceiving apparatus, terminal devices (Figure 1 [not reproduced]) and a control console in the radio room.

Each antenna is a parabolic reflector (1.5 m diameter, Figure 2 [not reproduced]) housed beneath a radioparent dome. The two antennas permit continuity of communication because at least one of them is always within the zone of visibility of a satellite. The antennas are oriented on the basis of the current calculated coordinates of the satellite and ship, or on the basis of signals emitted by the satellite's radio beacon.

Mobile stations (heavy and light) may be airlifted to the places of their deployment by one or two C-160 Transalls. They consist of an antenna (1.3 or 3 m in diameter) and apparatus housed in a container installed in the vehicle cab or on a wheeled chassis. There are plans for manufacturing a total of 15 stations of these types. In the opinion of foreign specialists installation of such stations at communication centers in Fort-de-France, Dakar, Djibouti and the island of Reunion would significantly raise their possibilities for organizing dependable communication over large distances.

It is reported in the foreign press that in the next few years the command of the French armed forces plans to initiate development of the advanced Syracuse-2 satellite communication system. A contract for its development has been signed with France's Aerospatiale and Matra.

11004

Sabotage Device Disposal Equipment

18010231l Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 59

[Article by Capt 2d Rank (Res) V. Mosalev: "Sabotage Device Disposal Equipment"]

[Text] England's A B Precision is producing the LMDE device (Limpet Mine Disposal Equipment) designed to free magnetic sabotage devices attached to ship hulls. Such devices usually have a special mechanism which detonates them if an attempt is made to separate them from the ship hull. This is why disposal of such a sabotage device requires that it be destroyed without being separated from the vessel's hull.

The LMDE device is a hydraulic gun consisting of a magnetic base (cobalt steel) and mount, and a barrel secured to pivots. A small charge with an electric detonator connected to an electric demolition exploder by a cable is inserted into the breech end of the barrel. The LMDE has neutral buoyancy, which is achieved by securing floats to its base by a special belt. These floats facilitate its installation at a depth down to 30 m.

If a mine is discovered on the hull of a ship, an LMDE device is installed next to it with magnets, and the barrel of the device is aimed at the center of the mine. After the divers return to the ship the charge is exploded by the demolition exploder, and water filling the barrel imparts a hydraulic shock to the mine housing that destroys the mine before it is able to detonate.

The complete LMDE outfit also includes a spare magnet and gun barrel with special attachments, and a box of reduced charges intended for personnel training. Each gunbarrel can only be used twice with full charges to actually destroy sabotage devices.

LMDE devices have already been purchased by the navies of Great Britain (500 outfits), Canada, Italy, New Zealand and other countries.

11004

Draft U.S. Military Budget for 1988 and 1989 Fiscal Years

18010231m Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 61-68

[Article by Col Ye. Zubrov and Lt Col V. Yefremov]

[Text] Together with other countries of the socialist fraternity the Soviet Union is doing everything it can to restrain the arms race and to defend and strengthen the peace. The new way of thinking and acting, the new approach being taken by the USSR to solving global and regional international problems, proclaimed at the 27th CPSU Congress, has been reflected in all peace initiatives that have been proposed by our country.

Desperate resistance to peace and detente on the part of the military-industrial complex of the USA and other forces of international imperialism has manifested itself clearly on the background of the Soviet Union's untiring aspiration to do everything possible to prevent nuclear catastrophe.

The aggressive course of the military-political leadership of the USA, which is directed chiefly at attaining military superiority over the USSR, is reflected in the continual growth of financial resources allocated for militaristic preparations.

For the first time in January 1987 the Reagan administration submitted a draft military budget to the American Congress for two fiscal years—1988 and 1989. The official U.S. military budget (the so-called federal "National Defense" program) for fiscal year 1988 is planned by the administration at an amount of $312 billion, which is 6.5 percent higher than the current year's budget. A total of $332.4 billion is foreseen for fiscal year 1989 (a 6.5 percent increase over the 1988 level). As follows from the draft of the budget, in fiscal year 1992 the allocations for military purposes will be almost $400 billion, while for the five-year period as a whole (1988-1992) around $1.8 trillion is planned.

The bulk of the official military budget (over 97 percent) is intended directly for the Pentagon. According to data in the foreign press the U.S. Defense Department requested allocations totaling $303.3 (323.3) billion for fiscal year 1988 (here and subsequently the indicators for the military budget for fiscal year 1989 are given in parentheses).

Moreover significant assets are being allocated to civilian departments and agencies for militaristic purposes. Thus the plans call for providing $8.1 (8.5) billion for military programs of the Department of Energy. This is 76 (71) percent of the total requested for this department. There are plans for allocating $4.5 (4.6) billion for the development, testing and production of nuclear weapons, including warheads for intercontinental ballistic missiles (ICBMs), medium-range ballistic missiles

(MRBMs), cruise missiles and nuclear bombs and artillery shells. Considerable sums—$2.7 (3.0) billion—are requested for the production of nuclear materials and for burial of radioactive wastes. The Department of Energy is given an important role in implementation of the SDI program. In 1983-1986 just three laboratories of the Department of Energy received contracts worth over $1 billion in this program.

Important significance is attached to improving civil defense and ensuring the mobilizational readiness of the U.S. economy for war. The Federal Emergency Management Agency is to receive $332 (267) million for these purposes in 1988.

The National Aeronautics and Space Administration (NASA) also engages in activities with a military orientation. Its budget for 1988 is planned at a total of $9.5 (10.6) billion. In this case while the budget item "Space Flights, Flight Control, Data Transmission Resources" is to receive priority financing in 1988 (43 percent of the administration's budget), in 1989 the largest volume of NASA's financial resources (47 percent) is to be allocated to research on and development of space technology, and chiefly space stations with military applications. The Pentagon attaches considerable importance in its SDI program to the Shuttle space system. From the moment operation of manned reusable spacecraft is resumed (in February 1988) and through 1990, 20 flights are to be made; 17 of them will be carried out for the purpose of placing objects developed in response to orders from the Defense Department into orbit.

Data on the distribution of money allocated to the Defense Department for "Basic Programs" published in the foreign press are the most important from the standpoint of determining the main directions in which the U.S. Armed Forces are to develop (Table 1). A total of $23.7 (27.7) billion—that is, 7.8 (8.6) percent of the Defense Department's budget—have been requested for the "Strategic Forces" program for 1988. These allocations are earmarked chiefly for purchasing and modernizing weapon systems (Table 2). Important significance is attached to improving—besides offensive components of the strategic forces-strategic defensive forces (antiballistic missile, cosmic defense, antiaircraft), as well as strategic communication, monitoring, control and reconnaissance systems.

Table 1. Distribution of U.S. Defense Department Budget Allocations Among the Basic Programs (Billions of Dollars)

Basic Programs	Fiscal Years			
	1986	1987	1988	1989
Strategic forces	24.2	21.5	23.7	27.7
General purpose forces	116.2	117.2	118.8	126.8
Military reconnaissance	26.4	28.2	30.2	31.5

Table 1. Distribution of U.S. Defense Department Budget Allocations Among the Basic Programs (Billions of Dollars)

Basic Programs	Fiscal Years			
	1986	1987	1988	1989
Forces for troop transport via air and sea	7.6	7.2	6.0	6.6
Armed forces reserves (including National Guard)	15.6	16.0	17.5	18.6
Research and development	25.7	28.0	35.1	36.5
Centralized rear supply and armament repair	24.4	23.1	26.0	27.0
Administrative activities and control systems	7.1	6.7	6.3	6.7
Military assistance to other countries	0.6	0.7	0.9	0.9
Total	281.4	284.9	303.3	323.3

Allocations for the "General Purpose Forces" program are growing at a high rate. There are plans for allocating $118.8 (126.8) billion to this program in 1988, which is 39.2 (39.2) percent of the Defense Department's budget. These assets are earmarked for the maintenance and technical supply of ground troops, air force tactical aviation and the navy (excluding nuclear-powered ballistic missile submarines).

Table 2. Budget Allocations for Purchases of the Principal Weapon Systems for Strategic Forces (Billion of Dollars)

Weapon system (purchased annually)	Fiscal Year	
	1988	1989
MX intercontinental ballistic missiles	1,280	1,361
Trident-2 submarine-launched missiles	1,353	1,436

Measures aimed at improving combat control, communication and reconnaissance systems intended to support the control "mechanism" of the U.S. Armed Forces in nuclear and conventional war have a special role to play. This is why allocations to the program "Military Reconnaissance, Development of Communication, Observation, Monitoring and Control Systems" are growing at a faster rate than the overall growth of the Defense Department's budget, and why the proportion of these allocations will increase from 7.7 to 9.9 percent between 1984 and 1988.

According to data in the American press, when it comes to distributing the financial resources of the Defense Department among the basic programs, the size of the "Research and Development" program is growing with every year, chiefly owing to the aspiration of the U.S. leadership to achieve military-technical superiority over the Soviet Union. A total of $35.1 (36.5) billion has been requested in 1988 for research on and development of

new weapons. The proportion of this program will rise from 8.3 to 11.5 percent in the period from 1984 to 1988. The allocated resources will be used for research and development in the SDI program (there are plans for providing $5.2 billion for these purposes in 1988, and $6.3 billion in 1989), for development of MX ($0.6 and 1.3 billion) and Midgetman ($2.6 and 2.2 billion) intercontinental ballistic missiles, Trident-2 submarine-launched ballistic missiles ($1.1 and 0.6 billion), and so on.

A new fighter and a transport aircraft for the air force, a helicopter for the ground troops, a multipurpose nuclear-powered submarine, an air-to-air guided missile and many other weapon systems are being developed with the purpose of increasing the fighting power of general purpose forces. Significant growth in allocations in fiscal years 1988 and 1989 is also planned in the basic programs "Centralized Rear Supply and Armament Repair" and "Training, Medical Services and Logistical Support to Personnel" (see Table 1).

As is noted in the foreign press, inspection of the purposes to which the U.S. Defense Department intends to put its budget reveals the White House's desire to increase the fighting power and combat readiness of the country's armed forces (Table 3). This is manifested especially clearly in the continual growth of funds allocated for scientific research and experimental design work. Allocations for these purposes in 1988 will increase by 19.1 (1.1) percent, and they will attain $43.7 (44.3) billion. As in previous years, outlays on the development of advanced technologies, over 70 percent of which is being carried out in the Star Wars program, are increasing at the highest rate.

Table 3. Distribution of Budget Allocations of the U.S. Defense Department in Relation to Specific Purposes (Billions of Dollars)

	Fiscal Years			
Funding item	1986	1987	1988	1989
Combat training, personnel housing, maintenance, operation and repair of weapons and military equipment, other	147.2	153.9	165.5	173.8
Purchases of weapons and combat equipment	92.5	85.8	84.0	94.6
Scientific research and experimental design work	33.6	36.7	43.7	44.3
Military construction and living quarters				
8.1				
8.5				
10.1				
10.6				
Total	281.4	284.9	303.3	323.3

The largest share of funds requested by the administration for research and design is allocated to the air force—42.6 (40.2) percent; the navy gets 24.0 (22.8) percent, while the ground troops get 12.6 (13.5) percent. Funds for scientific research and experimental design work by directorates and agencies of the Defense Department are growing the fastest (they will increase by almost 2.5 times in 1984-1989). This is explained by the fact that financial resources for the Star Wars program are released not to the branches of the armed forces but rather to the Organization for Implementation of SDI. As a result beginning in 1985 directorates and agencies of the Defense Department are to receive greater amounts for scientific research and design for these purposes than the ground troops, while in 1988 they are to receive more than the navy as well.

In the opinion of the foreign press funds allocated for the purchase of weapons and combat equipment will decrease somewhat in 1988 in comparison with the previous year (by 2.1 percent), while in 1989 they will increase by 12.6 percent in comparison with 1988. As before, sizable amounts are to be spent in fiscal years 1988 and 1989 chiefly on acquisition of aviation equipment (over 30 percent of allocations for purchases) and of rocket and space equipment (over 20 percent).

It is noted in the foreign press that approximately identical volumes of financial resources have been allocated in recent years to the air force and the navy for maintenance and equipment—33-34 percent of the Defense Department's budget (Table 4). The share received by the ground troops is over 26 percent. Allocations to the Defense Department's directorates and agencies are growing at a high rate. They will more than double in 1984-1989. This is associated chiefly with the sharp increase in funds for developments under the SDI program. In 1989, around 28 percent of the $22.7 billion requested for directorates and agencies of the Defense Department are to be allocated for these purposes.

Table 4. Distribution of Allocations from the U.S. Defense Department's Budget to Different Branches of the Armed Forces (Billions of Dollars)

	Fiscal Year			
Branch of the Armed Forces	1986	1987	1988	1989
Ground Troops	73.1	75.3	80.1	84.7
Air Force	94.9	94.6	100.4	107.2
Navy	96.1	95.7	102.3	108.7
Directorates and agencies of the Defense Department	17.3	19.3	20.5	22.7
Total	281.4	284.9	303.3	323.3

There are plans for allocating $32.5 (38.1) billion in fiscal year 1988 (1989) for the purchase of weapons and combat equipment for the air force. This is 38.6 (40.2) percent of all assets allocated to the Defense Department for these purposes (Table 5).

Table 5. Distribution of Allocations from the U.S. Defense Department's Budget for the Purchase of Weapons and Combat Equipment, in Different Branches of the Armed Forces (Billions of Dollars)

Branch of the Armed Forces	Fiscal Year 1986	1987	1988	1989
Ground troops	17.9	15.9	16.2	16.6
Air Force	38.2	34.5	32.5	38.1
Directorates and agencies of the Defense Department	2.7	2.3	1.4	1.7
Total	92.5	85.8	84.0	94.6

A total of $14.2 (17.2) billion are allocated for acquisition of aviation equipment. Production of tactical warplanes will be continued on the basis of these funds. The plans of the air force for fiscal years 1988 and 1989 foresee purchasing 42 F-15A Eagle tactical fighters ($1.7 billion annually) and 180 F-16A Fighting Falcon tactical fighters ($2.9 billion in 1988 and $3.4 billion in 1989).

There are plans for acquiring two (four) C-17 aircraft for a total of $724 (1,100) million with the purpose of raising military airlift capabilities. Besides purchasing new airplanes, the air force will continue to modernize aviation equipment presently in the inventory: B-52 strategic bombers—$270.7 (194.5) million, and KC-135 tankers—$646 (660) million.

A total of $9.8 (11.0) billion are being allocated for the acquisition of rocket and space systems. Strategic MX missiles occupy a special place among these programs. Each year 21 missiles are to be purchased, for which $1,280 (1,361) billion are requested. The cost of creating the entire system is tentatively set at $26-28 billion.

The air force will continue to receive ground-based cruise missiles: thirty-seven units will be ordered in fiscal year 1988 ($77.3 million). There are plans for purchasing larger lots of different classes of guided missiles in fiscal years 1988 and 1989: Sparrow, Sidewinder and AMRAAM air-to-air missiles, Maverick air-to-ground missiles, and HARM antiradar missiles. Final allocations for acquisition of 558 Sparrow guided missiles—$99.5 million—are to be made in 1988. Purchases in fiscal years 1988 and 1989 will include 956 (760) Sidewinder guided missiles for $53.1 (48.0) million, 630 (1,750) AMRAAM (AIM-120) medium*range guided missiles for $837 (881) million, 2,100 (1,900) Maverick guided missiles for $364 (369) million, and 1,748 (893) HARM antiradar missiles for $432 (222) million.

$119.2 (77.7) million are being allocated for modernization of Minuteman-2 and -3 strategic missiles.

A part of the assets released to the air force for missile and space equipment—$265.9 (294.4) million—are intended for the purchase of three earth satellites for the DSCS (Defense Satellite Communications System) strategic satellite communications system, two military weather satellites for the DMSP (Defense Meteorological Satellite Program) system and four earth satellites for the NAVSTAR global satellite navigation system, as well as for implementation of classified programs.

Over 40 percent of all Defense Department assets for research and development are being allocated to scientific research and experimental design work in the air force. There are plans for allocating $18.6 and $17.8 billion in fiscal years 1988 and 1989 respectively (Table 6). The bulk of these funds will be allocated to strategic programs—$8.4 (8.1) billion. These programs include development of small Midgetman ballistic missiles ($2.3 (2.2) billion), B-1B strategic bombers ($415.5 (386.7) million) and space defense systems ($402 (386) million). In tactical programs, an advanced tactical fighter that is to replace the F-15 and F-16 tactical fighters ($537 (703) million) and the C-17 military transport aircraft ($1,220 (982) million) are being developed. $338 (238) million are to be allocated for the creation of the JSTARS (Joint Surveillance and Target Attack Radar System) joint radar system for reconnaissance and weapon control.

Table 6. Distribution of Allocations from the U.S. Defense Department's Budget for Scientific Research and Experimental Design Work, in Relation to Branches of the Armed Forces (Billions of Dollars)

Branch of the Armed Forces	Fiscal Year 1986	1987	1988	1989
Ground Troops	17.9	15.9	16.2	16.6
Air Force	38.2	34.5	32.5	38.1
Navy	33.7	33.1	33.9	38.2
Directorates and agencies of the Defense Department	2.7	2.3	1.4	1.7
Total	92.5	85.8	84.0	94.6

There are plans for allocating $33.9 (38.2) billion to the navy for acquisition of weapons and combat equipment. This is over 40 percent of all assets allocated for these purposes by the Defense Department.

Purchases of aviation equipment and various classes of ships are the principal directions in the financing of this branch of the armed forces. $7.2 (7.7) billion were requested for aviation equipment for the navy. This includes funding of the production of 84 (72) F/A-18 multipurpose aircraft ($2.6 (2.3) billion), 12 (12) F-14A Tomcat deck*landing fighters ($0.8 (1.0) billion), 32 (32) AV-8B vertical or short take-off and landing aircraft ($700 (737) million) and 12 (18) A-6E/F deck-landing attack aircraft ($853 (890) million).

There are also plans for purchasing 6 (9) EA-6B Prowler ECM aircraft ($357 (507) million), 6 (6) E-2C Hawkeye AWACS aircraft ($427 (354) million) and 3 (7) E-6A TAKAMO retransmitting aircraft ($347 (363) million).

Significant funds have been earmarked for helicopters for the navy. There are plans for purchasing 6 (6) SH-60 LAMPS Mk3 multipurpose deck-landing helicopters ($144 (124) million) and 14 (14) CH-53E Super Stallion transport-assault helicopters ($255 (219) million).

There are also plans for modernizing naval aviation equipment. $0.7 (0.7) billion are allocated for this, and $1.5 (1.3) billion are allocated for spare parts acquisition.

There are plans for allocating $11.1 (11.9) billion for the warship and auxiliary vessel building program. These assets will fund construction of 18 (22) new ships. In accordance with this program around $1.4 billion are requested in fiscal years 1988 and 1989 for construction of the 15th and 16th "Ohio" class nuclear-powered ballistic missile submarines. Construction of over 20 such submarines is foreseen in all.

The navy is also implementing a major program of construction of "Los Angeles" class nuclear-powered submarines. There are plans for allocating $1.8 (1.6) billion for production of 3 (2) submarines of this class. Funds have already been released for construction of 56 such nuclear-powered submarines. Allocations are requested for the purchase of 2 (2) "Ticonderoga" class guided missile cruisers ($2.0 (1.8) billion) and 3 (3) "Orli Byerk" [transliteration] class guided missile destroyers ($2.2 (2.2) billion).

Missiles for naval ships and aviation worth $5.7 (6.6) billion are to be purchased in fiscal years 1988 and 1989, to include: 66 (66) new Trident-2 submarine-launched ballistic missiles for "Ohio" class nuclear-powered ballistic missile submarines ($2.3 (2.2) billion), 475 (510) Tomahawk cruise missiles for "Los Angeles" class nuclear-powered submarines and surface ships ($1.0 (1.1) billion), 124 (138) Harpoon antiship missiles ($172 (139) million), 1,150 (1,635) Standard surface*to-air guided missiles ($600 (836) million), and for deck-landing aircraft, 766 (1,766) HARM antiradar guided missiles ($205 (411) million), 430 (560) Phoenix guided missiles ($399 (465) million), 1,700 (731) Maverick guided missiles ($221 (131) million) and 288 (0) Sidewinder guided missiles ($43 (0) million).

$10.5 (10.1) billion are requested for the navy for its program of scientific research and experimental design work. Around 60 percent of these funds are allocated to tactical programs. The largest amount is earmarked for development of the V-22 Osprey, an advanced vertical or short take-off and landing airplane ($466 (307) million), submarine combat systems ($343 (393) million), and an SSN21 "Seawolf" submarine ($213 (195) million), and for modernization of F-14A Tomcat deck-landing fighters ($185 (144) million).

In strategic programs, an order of $1.1 (0.6) billion was placed for continued development of the Trident-2 submarine-launched ballistic missile, and $86 (66) million were requested for development of strategic communication systems.

There are plans for allocating $55.1 (57.6) billion for combat training and logistical support as well as for the maintenance of servicemen.

A unique feature of the budget of the ground troops is the sizable proportion of the budget earmarked for combat training, for personnel maintenance and for logistical support—$54.9 (58.3) billion, or around 70 percent of the entire budget for this branch of the armed forces for each year. $16.2 (16.6) billion are requested for purchases of weapons and combat equipment for the U.S. Army (see Table 5). Thus there are plans for acquiring 600 (534) M1 Abrams tanks ($1.6 (1.5) billion), and 616 (618) M2-Bradley infantry fighting vehicles and M3 fighting reconnaissance vehicles ($0.8 (0.7) billion). A sum total of 7,800 tanks and around 7,000 M2 and M3 armored fighting vehicles are to be acquired.

Modernization of the army's helicopter fleet will continue. Sixty-seven AH-64A Apache combat helicopters are to be purchased for the army in 1988 for $0.7 billion. There are plans for purchasing 61 (72) UH-60A Black Hawk multipurpose helicopters for $480 (500) million. A total of $2.5 (2.2) billion is to be allocated.

The American administration intends to allocate $2.5 (2.9) billion to equip ground troops with missiles: $985 (906) million for the purchase of 715 (815) guided missiles for the Patriot surface-to-air missile system, $200 (244) million for acquisition of 4,200 (5,000) Stinger portable surface-to-air missile systems, and $140 (123) million for delivery of 9,800 (9,800) TOW-2 antitank guided rockets and 72,000 (36,000) free-flight rockets for the MLRS multiple rocket launcher system.

The leadership of the ground troops is devoting special attention to purchases of electronic reconnaissance, communication and control systems ($3.8 (4.0) billion).

There are plans for allocating $5.5 (6.0) billion for scientific research and experimental design programs in the army's interests. $4.8 (5.5) billion are to be allocated for the creation of new weapon systems for the ground troops, and $0.7 (0.5) billion are to be allocated for improvement of weapons already in the inventory. The main programs are development of an advanced light helicopter ($267 (532) million), a troop antiaircraft system ($132 (166) million), aircraft engines ($135 (66) million), a divisional antiaircraft control system ($108 (167) million), the advanced ATACMS (Army Tactical Missile System) ($112 (87) million) and an improved family of armored fighting vehicles ($104 (81) billion).

Significant amounts are allocated in the interests of Defense Department directorates and agencies: purchases of weapons and combat equipment ($1.4 (1.7) billion) and scientific research and experimental design work ($9.1 (10.4) billion). The main research and design program receiving financing is the SDI program ($5.2 (6.3) billion).

Thus as with the budgets of previous years, the draft budgets of the U. S. Defense Department for fiscal years 1988 and 1989 attest to growth of not only the USA's nuclear missile potential but also of its conventional resources of warfare.

The position of the Soviet Union in the fundamental issues of war and peace is universally known. "We," declared M. S. Gorbachev, "rejected the right of the leadership of any country, be it the USSR, USA or any other, to pass a death sentence on mankind. We are not judges, and the billions of people are not criminals to be punished. This is why we must dismantle the nuclear guillotine. The nuclear powers must step over their nuclear shadow into a nuclear-free world." Yes, from the first days of its existence the USSR has been the champion of peace. This is confirmed by all of its initiatives directed at reducing arms and implementing the principles of peaceful coexistence of states with different sociopolitical structures—principles that are followed consistently and constantly. But the Soviet people cannot sit by quietly in the face of growing military preparations by the aggressive circles of imperialism, and chiefly the USA. The "crusade" declared by President Reagan against socialism as a social system compels the Soviet Union to "keep its powder dry," to display the highest alertness, patience and firmness, and to maintain unweakening attention to strengthening the defense capabilities of the Country of October.

11004

Civil Defense in NATO's System of Military Preparations

18010231n Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 68-72

[Article by Col V. Goncharov]

[Text] The NATO countries are continually increasing the importance of the role played by civil defense in their system of military preparations. It is interpreted today by the bloc's military-political leadership as an inseparable component of general military preparations for war against the USSR and other countries of the socialist fraternity. In connection with this, militaristically oriented ruling circles are making a persistent effort to get all of the bloc's members to implement measures to prepare the economy and population of their countries for action in the face of nuclear war. They are compelled to reckon with the consequences of their aggression against socialist countries, and they admit that even if they do make an preemptive strike, they could not avoid just compensation as a result of a retaliatory strike, which would cause enormous losses in manpower and materiel. Under these conditions the issue of ensuring survival of the country's population and military economy—important factors that determine the fighting power of the state—acquires special significance. In the opinion of NATO specialists the dependence of the course and outcome of armed conflict on the condition of the economy, on its capacity for providing logistical support to the armed forces, will grow significantly in a modern war. And this requires sizable human resources. It is precisely this circumstance, and not the "humanitarianism and love of mankind" which representatives of the leadership of imperialist states love to proclaim, that compels them to attach special significance to protecting the population.

In the opinion of foreign military specialists the armed forces have the main role in protecting the population. But no matter how powerful they might be, experts believe, the troops would not be able to fulfill this task on their own. This is why besides active resources, passive or nonmilitary resources, and chiefly civil defense, will play an important role in the course of war. The book "Strategy for Survival" published in the USA states this in this regard: "There is no military force and there is no weapon or strategy that would make it possible to avert the enormous losses possible in total nuclear war. These losses can be reduced only to a certain limit through effective civil defense." In the viewpoints of bourgeois military specialists the role and place of civil defense in the general system of military preparations is determined by the nature and the scale of the war, and by the possibilities civil defense has for ensuring survival of the population and of economic and social institutions which the state's viability requires. In this case the main emphasis is made on protection against nuclear weapons, inasmuch as it is also effective against other kinds of mass destruction weapons. Recognizing the possibility of a war without nuclear weapons or with only tactical nuclear weapons, the civil defense leadership of the bloc's countries feels that civil defense preparations should be made with total nuclear war in mind.

It is noted in the foreign press that the great scale and complexity of the tasks that civil defense is called upon to carry out in a nuclear missile war requires implementation of all of the principal measures ahead of time, while still at peace. These measures are being implemented in NATO countries in relation to three basic directions. The first is associated with providing maximum protection to the population, the second is oriented on increasing the stability of the economy in general and of its individual sectors and facilities in particular. And finally, the third direction foresees creation, preparation and planning of the use of men and equipment for rescue and emergency recovery operations in centers of destruction.

Protection to the population is afforded in NATO countries by two mutually related means: creation of protective structures and evacuation and dispersal of the population in rural and suburban zones. In this case concealment of the population in shelters is believed to be the most dependable means of protection against mass destruction weapons and other modern attack resources. This is explained primarily by the fact that nuclear missiles have significantly intensified the role of the surprise factor and reduced the time available for protective measures. In the estimation of Western specialists, in the case of a surprise attack the military-political leadership of the USA would have not more than 15-20 minutes, while that of West European countries would have not more than 4-5 minutes to activate and implement civil defense plans. This is why these specialists feel that one of the main tasks of civil defense today is to create dependable protective structures near the places where the population works and lives.

In the opinion of foreign experts only bomb shelters capable of providing protection against all destructive factors of a nuclear burst can ensure maximum protection and survival of the population. However, creation of such a system of shelters is believed to be extremely expensive and practically unachievable, even in the most highly developed capitalist states. Thus back in the early 1960s the USA did consider the draft of a long-range program of construction of nuclear bomb shelters for all of the country's population, but it had to be abandoned due to the high cost. Civil defense organs focused their main attention on implementing programs to create a network of radiation shelters in the country, chiefly by identifying and adapting spaces suited to these purposes.

These plans are still being implemented in the USA today. According to official data around 250,000 spaces suitable for sheltering an estimate of 238 million persons have been identified in the country. Of this amount, 119,000 (with a capacity of 120 million persons) are identified as radiation shelters, to include 57,000 (with a capacity of 23 million persons) that can be reequipped as nuclear bomb shelters. Outwardly these figures are impressive, all the more so if we consider that the population of the USA is a little more than 240 million, but as is noted in the Western press, when the survey of spaces suitable as bomb and radiation shelters was made, not only basement spaces but even spaces in above-ground stories of large buildings were taken into account. Also added to this inventory were various underground workings and natural caverns, located as a rule quite far from where the population lives, which would make their prompt occupation difficult when the need arises. Moreover the surveyed spaces are distributed through the country's territory irregularly (in relation to where the population lives).

Systems of protective structures are also being created in other NATO countries. World War II era bomb shelters have been designated and are now being reconstructed in the FRG, Great Britain, Italy and Greece; construction of new bomb shelters is most typical of Denmark, Norway and the FRG. All bloc countries are making a wide practice of outfitting dual-purpose structures as shelters—underground garages, warehouses, sports stadiums, tunnels and so on. Just as in the USA, use of various underground workings as protective structures is also foreseen in West European countries.

It should be noted that in the last few years a number of bloc countries have significantly intensified their efforts to adapt subway stations as public shelters. Thus measures are being implemented in the USA, the FRG, Great Britain, France, Greece and Italy. In particular it is reported in the press that the FRG developed a standard plan for creating shelters out of subway stations capable of protecting up to 4,500 persons. Several such stations have already been prepared, and an integrated exercise in which preparation for reception of shelter occupants was conducted in one of them in the city of Stuttgart.

It is pointed out in the foreign press that evacuation of the population from major cities and from the most important military-industrial centers into less-dangerous regions is another important means of protecting the population, especially in a time of gradual escalation of international tension before a war. The ruling circles and the civil defense leadership of different NATO countries differ in their appraisals of the possibilities for evacuating the population. For example while the USA plans to evacuate around 150 million persons from regions of anticipated strikes, the civil defense leadership of Great Britain recommends that after an alert is raised the public should remain "in place"—at home and at work in locally available protective structures. It believes that evacuation would be unsuitable because of the high density of the population and because the principal industrial and military facilities that may become targets in a retaliatory nuclear strike are uniformly distributed over all of the country's territory. Evacuation is foreseen only from those regions in which high radiation levels are most probable.

In the FRG, France and a number of other European NATO countries, evacuation is seen as a less effective method of protection in comparison with concealing the population in protective structures. But despite this approach, they have drawn up plans for evacuating and dispersing the population from large cities and from regions of anticipated combat operations.

It has been emphasized on several occasions in the press of countries in the North Atlantic alliance that the system of protective structures, and to an equal degree evacuation and dispersal, may be effective only in the event that the population is warned in time. This is why they are creating extensive networks of observation and warning posts, and organizing and maintaining coordination between air defense and civil defense. In particular the NORAD command post in Colorado Springs provides warning to American and Canadian civil

defense information centers as to possible attacks and radioactive fallout. According to a statement by the secretary of state for the home department, which is responsible for civil defense, the English warning system will be characterized by the highest degree of readiness of all systems existing in NATO bloc countries.

Another highly important problem of civil defense, in the opinion of Western military specialists, is that of ensuring survival of the economy in a nuclear missile war. Developing their plans for preparing and conducting aggressive wars, NATO strategists are taking account of the fact that in a modern war, the economy is an object of direct action by armed forces, and that its annihilation is one of the most important strategic goals of a war. This is why the problems of protecting and increasing the functional stability of the most important economic sectors, chiefly war industry, power engineering, transportation, agriculture and a number of others, are constantly in the center of attention of the military-political leadership and the civil defense leadership of bloc allies.

Numerous scientific research institutions as well as practically all ministries and departments are being asked to participate in solving the problems of economic survival in the countries indicated above. These institutions are evaluating the vulnerability of the most important sectors of industry, power supply systems, transportation and communications. Plans for preparing industry for an emergency situation are being written ahead of time on the basis of this research. In the opinion of civil defense specialists, because of the high concentration of industrial production both in the USA and in many countries of West Europe, one of the most effective ways of raising the stability of military production is to disperse vitally important industrial enterprises over a larger area.

The governments of the USA, the FRG and Great Britain encouraged decentralization of new industrial construction in the postwar era, but this idea was not widely accepted because the overwhelming majority of the enterprises are in the hands of private owners who are reluctant to make the added expenditures. Although a certain tendency toward construction of enterprises outside large cities has been observed recently, this is mainly associated with solving housing, transportation and other socioeconomic problems. Construction and concealment of the most important industrial facilities under ground is believed to be another extremely important means of protecting industry. The FRG, Great Britain and France have a certain amount of experience in underground construction. But as with dispersal, this method is expensive, and it is far from always acceptable to private business. This is why using various underground workings and locating light and medium machine building enterprises, weapon, precision instrument and computer plants and various supply dumps and warehouses in them is recommended as a means of reducing the vulnerability of industrial facilities. A typical example of such a solution to the problem is the use of limestone quarries in the vicinity of Kansas City, USA (Figure 1 [figures not reproduced]). Various production shops, auxiliary services, a number of institutions, a storage facility for valuable technical information and two large refrigerated warehouses for storage of food and medicines are located here beneath the ground, covering an area of 900 hectares. In an emergency situation evacuees are to be brought here as well.

Among measures to increase the functional stability of industry in wartime, much significance is attached to building back-up enterprises and creating strategic stockpiles of materials and equipment. It is emphasized in this case that not only should these enterprises be created, but they should also be dispersed and concealed appropriately. Natural and artificial underground caverns are recommended for storage of strategic reserves (especially petroleum products).

Preparation of shelters for blue and white collar workers is believed to be an important element of ensuring dependable work of enterprises. With this goal in mind, many countries, particularly the USA, the FRG and Canada, are building and outfitting shelters providing higher protection (against all destructive factors of a nuclear burst) at some enterprises. As an example the USA plans to build nuclear bomb shelters with a total capacity of up to 4 million for the work shifts of the principal military-industrial facilities.

It is believed that the effectiveness of ensuring the survival of the population and protection of manpower necessary to mobilize the economy and satisfy the needs of the armed forces, as well as of productive capacities, strategic stockpiles and other elements of the economic potential, depends in many ways on how well the population is trained to protect itself from mass destruction weapons, and on its ability to conduct rescue and emergency recovery operations following an attack. To solve this problem, all of the bloc's countries are organizing extensive civil defense training for the public and creating specialized formations (centrally, regionally and locally subordinated) and self*defense subunits and, at large enterprises, various services (firefighting, repair and restoration, radiation and chemical defense, rescue, medical, information and some others) out of the blue and white collar workers of the given enterprise.

Judging from press reports the relative lack of technical resources in the civil defense systems of most NATO countries and the shortage of personnel in civil defense formations for rescue and emergency recovery operations make it necessary to commit armed forces to this work (chiefly the ground troops) and to organize close coordination between them and civil defense. This strategy is reflected in the plans of the USA, Canada, the FRG, Great Britain and Italy for using their armed forces in wartime. It is foreseen that during a war, units and subunits that are not directly involved in combat operations will provide assistance to civil defense. At the

same time it is indicated that military assistance should supplement and not substitute civil defense, and that it cannot be provided at the expense of the principal mission of the troops.

In turn, civil defense is called upon to provide all assistance that it can to the rear in supporting the combat activities of the troops. As an example the FRG, Norway and Denmark foresee using the men and equipment available to civil defense to restore transportation and communication lines, to conduct emergency rescue operations at military facilities, to evacuate casualties, to care for them and so on. Problems concerned with organizing coordination between the armed forces and civil defense are being solved in the course of regular exercises conducted within the framework of the bloc's combined armed forces, and on the basis of national plans (Figure 2), as well as in the course of disaster control following real natural disasters, production accidents and other disasters (Figure 3). In particular the FRG uses exercises to work out the problems associated with the activities of government organs in wartime, with switching the civilian sector from a peacetime to a wartime posture, with the support provided by civil defense forces to the actions of the armed forces, and so on. An exercise was conducted in March of this year to work out the joint actions of civilian and military authorities in a nuclear war situation; in it, military and political leaders actually occupied nuclear bomb shelters. Such exercises have also been conducted with the participation of the country's executives on several occasions in the USA as well.

As was noted on several occasions in the Western press, measures implemented in the NATO countries to improve civil defense are an inherent component of the multifaceted preparations for nuclear war, and they are often utilized by the military-political leadership of member countries to inflame anti-Soviet feelings among the public, despite the fact that they have recently been encountering continually growing resistance from progressive factions of the public.

Doubts as to the possibility of implementing all planned civil defense measures, within their planned volume and within the foreseen time period, are being expressed in the foreign press and in statements by many public and state officials. The possibility of "victorious survival" is also doubted by several proponents of the arms race in the USA.

11004

Air Traffic Control Service Directorate of the French Air Force

18010231o Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) p 75

[Article by Col V. Vovk]

[Text] According to a foreign press report the air traffic control service directorate of the French air force was created in 1968. Since 1976 it has been located at the air base in Taverny, where it monitors the organization of air traffic and the use of airspace by both military and civil aviation.

The directorate is subordinated to the country's air force commander (chief of staff), and it includes three basic divisions—organization and planning, air traffic coordination and control per se, and information.

The organization and planning division consists of the three following departments:

distribution and utilization of airspace. Its tasks include examining problems associated with creating rules by which to ensure sensible use of airspace with regard for the aviation interests of all organizations and agencies;

crisis situations and wars. Monitors the air situation and prepares operational plans for the air traffic control service in emergency situations and in the event of war;

air traffic and equipment planning. As is the case with civil aviation organs, its task is to plan the distribution of the frequencies used by aircraft radioelectronic equipment, including identification systems, and by ground resources.

The department for air traffic coordination and control also consists of three divisions, namely:

observance of air traffic regulations. Its task is to monitor fulfillment of the air traffic regulations established in the country; combat training and exercises. Prepares special guidelines and instructions on organizing air traffic control during the period of maneuvers (exercises) conducted both by national air forces and jointly with military aviation of other countries;

accidents and statistical data. Collects and processes all information on the air situation and maintains records on aircraft collisions in the air and near-accidents, as well as of other violations of air traffic regulations.

The information department is concerned with collecting, processing, analyzing and preparing documents on the air situation (radio navigation maps, instrument landing patterns and so on) and with their distribution among military and civilian users. According to Western press more than 600 parties use the services of this department.

11004

New French Panther Helicopter

18010231p Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) p 76

[Article by Col I. Chistyakov]

[Text] France's Aerospatiale has produced the SA.365M Panther multipurpose helicopter (see color insert [not reproduced]), a military version of the civilian SA.365N Dauphin-2 helicopter. It is noted in the foreign press that the new helicopter differs from the original model in that it is equipped with more-powerful Turbomeca TM333-1M turboshaft engines with shaft power of up to 910 horsepower (two 720 horsepower engines are installed in the Dauphin-2), and it possesses additional air intakes in the rear part of the engine nacelles, which provide a cooling air current to hot engine parts, reduce exhaust temperature (due to mixing with air) and remove exhausts up and out of the fuselage, all of which helps to significantly reduce the aircraft's infrared signature.

Extensive use of structures made from composite materials is said to be a unique feature of the helicopter. On one hand this made it possible to reduce the effective scattering area, while on the other hand it made structural components tough enough to resist bullets of up to 12.7 mm caliber. Moreover the SA.365M possesses protected fuel tanks, and the crew seats and some vitally important units and machine units of the flight and engine control systems are armor-protected. The basic combat characteristics of the SA.365M Panther helicopter are presented below.

Crew, persons	2
Weight, kg:	
maximum take-off	4,100
empty helicopter	2,300
normal flying weight	2,690
Speed, km/hr*:	
maximum	295
cruising, at sea level	275
Rate of climb at sea level, m/sec	8
Practical ceiling, m:	
in ground effect	3,200
out of ground effect	2,500
Range with maximum fuel, km	740
Dimensions, m: length of helicopter, including turning rotor	13.74
height	4.07
length of fuselage	12.07
diameter of four-blade main rotor	11.93
length of cargo cabin	2.3
maximum width	2.03
maximum height	1.4

*Flight characteristics are given at maximum take-off weight.

Judging from reports in the foreign press, the Panther helicopter is to perform several basic missions. Thus as an assault transport helicopter it can carry 8 to 10 assault troops for a distance of over 350 km. In the case of fire support to ground troops (for 2 hours from a range of up to 100 km), various weapons including two suspended gun mounts with 20-mm guns and a 180-round ammunition load, or launchers for 68 and 70-mm caliber free-flight rockets (44 and 38 rockets respectively), are mounted on two of its general-purpose pylons on the sides of the fuselage. As an antitank helicopter, it will be able to carry eight Hot antitank guided rockets. And finally, the SA.365M is to be employed in aerial combat with enemy helicopters and low-flying airplanes. With this purpose it will be armed with eight Mistral air-to-air guided missiles. Moreover it is designed to conduct air reconnaissance and electronic countermeasures, to evacuate patients and casualties (four persons on stretchers), to carry cargo (up to 1,600 kg externally suspended) and to conduct search and rescue operations.

Aerospatiale began development of the Panther helicopter on its own in 1981, and the first flight was completed in 1984. Test flights were conducted on a series-produced model in 1986. In the opinion of French specialists the new helicopter may be available for export in 1988.

11004

Bomb Shelter in the London Underground

18010231q Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87) pp 76-77

[Article by Col (Res) V. Yemelyanov]

[Text] Great Britain's civil defense plans for protecting the population turn considerable attention, in addition to building new public and private bomb and radiation shelters, to utilizing bomb shelters surviving from World War II, including public shelters built at stations of the London Underground. It is reported in the English press that there are a total of around 10,000 such bomb shelters, chiefly in Greater London and in major cities (Birmingham, Manchester, Liverpool). Eight public shelters communicating with eight stations of the Northern and Central lines were erected in the London Underground.

Each such shelter is intended for 8,000 evacuees. However, the press indicates that during the war only 37,000 places (out of 64,000) were used by the public; the rest were used for the needs of the armed forces, including the United States. The headquarters of the supreme commander-in-chief of Allied expeditionary forces in West Europe was located in one such shelter at Goodge Street Station.

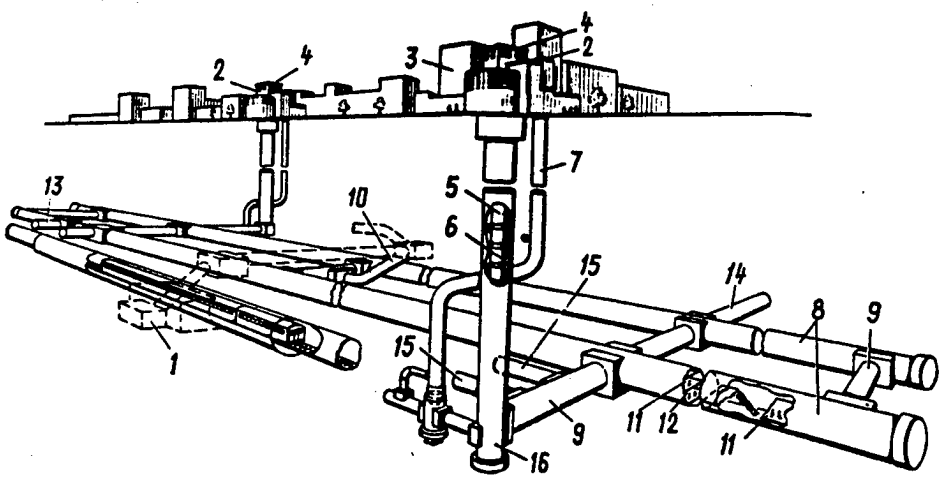


Diagram of a public bomb shelter erected on the Underground's Northern Line

Key: 1—Underground station; 2—bomb shelter entrances; 3—protective structure over shaft entrance; 4—filtered ventilation units; 5—entrance shaft and elevator; 6—spiral staircase; 7—air shaft; 8—shelter tunnels; 9—connecting tunnels; 10—tunnels connecting the bomb shelter to the Underground station; 11—upper story; 12—lower story; 13—shelter headquarters; 14—medical station; 15—latrines; 16—drainage

All shelters are approximately the same in design, and they are similar to one built at a certain station of the London Underground's Northern Line (see figure). The bomb shelter consists of two round parallel tunnels 425 m long and 5 m in diameter, structurally communicating with the Underground station. Both shelter tunnels have an upper and a lower story. Access to the shelter is through the entrances to the Underground station as well as through two specially equipped independent entrances built in the form of two vertical shafts. The latter are equipped with elevators and spiral staircases. The shaft entrances are protected as necessary, and the entire bomb shelter is outfitted with filtered ventilation units and other life support systems.

It is noted in the English press that all eight shelters built on lines of the ondon Underground are still being maintained in working order. One of them is to be used by the government for the period of an emergency.

11004

Articles Not Translated from ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 6, Jun 87

18010231r Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 87 (Signed to press 4 Jun 87)

END